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Evolved Expendable Launch Vehicle (EELV) Program Director Leading Effort to Launch Five Missions in 2002

Col. Robert K. Saxer, USAF
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EELV—The Next Step in Affordable Space Transportation

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Evolved Expendable Launch Vehicle System

The Next Step in Affordable Space Transportation

COL. R. K. SAXER, USAF • LT. COL. J. M. KNAUF, USAF • L.R. DRAKE • DR. P. L. PORTANOVA

A unique U.S. Air Force/industry partnership is completing development of the Evolved Expendable Launch Vehicle (EELV) systems, opening a new era of affordable space transportation for the 21st Century. EELV is an Acquisition Category (ACAT) 1D program structured to buy commercial launch services rather than launch vehicle hardware, associated infrastructure, and operations support as is done on current launch programs.

Competitively Priced, Assured Access to Space

EELV's overarching objectives are to develop a national, expendable launch capability that reduces the overall recurring cost of launch by at least 25 percent over existing systems, while at a minimum maintaining the reliability, operability, and capability levels of current launch systems. These objectives are reinforced by an EELV acquisition strategy that promotes competition over the life of the program, leverages the commercial marketplace, and encourages continued EELV contractor investment and technical innovation—all keys to achieving program life cycle cost, schedule, and performance goals.

The EELV program consists of two modular families of commercially owned and operated launch vehicles (Delta IV and Atlas V), and their associated launch site and manufacturing infrastructure, ground support systems, standard payload interfaces, and mission integration

Air Force Col. Robert K. Saxer, Evolved Expendable Launch Vehicle Program Director, is nearing final countdown for the first commercial launches of the Lockheed Martin Atlas V and Boeing Delta IV—first in a new generation of space launch vehicles.

Control Center in Lockheed Martin's Atlas Spaceflight Operations Center, Cape Canaveral.

Saxer is EELV System Program Director, and Knauf is Chief, EELV Launch Services, Space and Missile Systems Center, Los Angeles AFB, Calif. Drake is General Manager, EELV Division, and Portanova is Principal Engineer, Launch Directorate, The Aerospace Corporation, El Segundo, Calif.

Photos courtesy EELV System Program Office

Russian RD-180 engines provide the main propulsion for the Atlas V at Lockheed Martin's Atlas V manufacturing facility near Denver, Colo.

and launch operations activities. Evolved from current expendable launch systems and developed via a revolutionary cost-sharing commercial business strategy, both EELV systems will support the entire range of U.S. military, intelligence, civil, and commercial mission requirements.

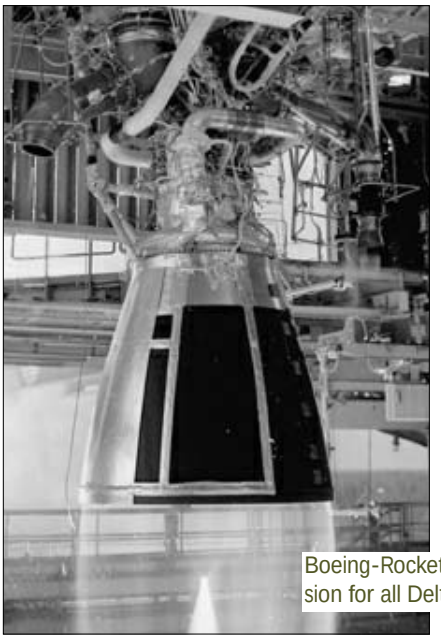
EELV features design simplicity and commonality, new applications of existing technology, and streamlined lean manufacturing and launch operations. When combined with flexible market-based contract terms and conditions, balanced financial incentives, and an aggressive risk management system, the Delta IV and Atlas V families of launch vehicles will provide reliable, competitively priced assured access to space for the U.S. Department of Defense (DoD) as well as the international launch services customer.

Lockheed Martin Atlas V Common Core Booster in the Atlas Spaceflight Operations Center, Cape Canaveral Air Force Station, Fla.

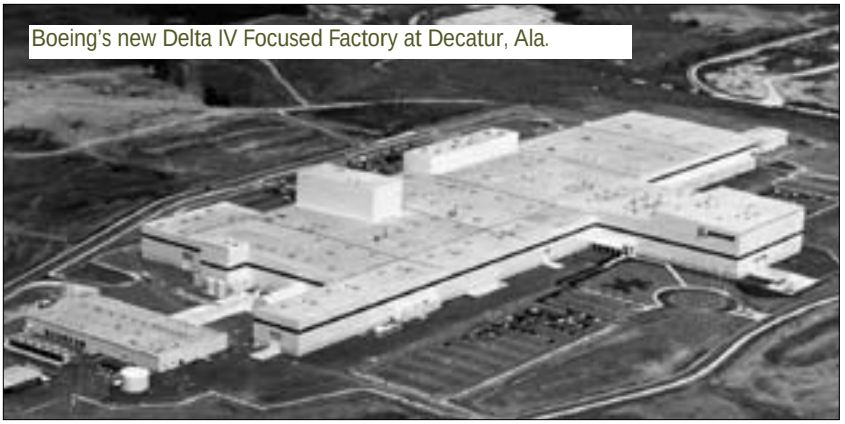
History and Genesis

The post-Cold War era presented DoD a new set of space launch and acquisition challenges as declining DoD budgets and personnel levels encountered a growing demand for military and commercial access to space. In addition to preserving the nation's access to space, a compelling need to reestablish U.S. preeminence in the international commercial space launch industry was also emerging. New foreign launch service providers, international partnering agreements, and the prohibitively expensive launch and sustainment costs associated with the existing U.S. fleet of Delta II, Atlas II, Titan II, and Titan IV Expendable Launch Vehicles (ELV) were all contributing to an accelerating shift in space launch market share toward Europe and Asia, and an erosion of America's space launch industrial base. Launch service customers now had competitive foreign alternatives and the flexibility to trade launch service price, performance, availability, and reliability to meet their mission-specific needs and operating constraints.

Boeing Delta IV Static Fire Unit is offloaded from the *Delta Mariner* transport vessel at Stennis Space Center, Miss.



Boeing-Rocketdyne RS-68 main engine, the primary propulsion for all Delta IV vehicles, is tested.



Boeing's new Delta IV Focused Factory at Decatur, Ala.

In the late 1980s and early 1990s, the U.S. Government conducted numerous studies and explored without success various launch system concepts that promised increased performance and lower launch costs. In December 1993, after several false starts and approximately $600 million, the U.S. Congress

formally tasked DoD to develop a Space Launch Modernization Plan (SLMP). Then Deputy Secretary of Defense Dr. John M. Deutch assigned this responsibility to the U.S. Air Force (USAF); Air Force Gen. Thomas S. Moorman Jr., was commissioned to lead the effort.

Moorman's SLMP team developed four modernization options:

- Sustain existing launch systems.
- Evolve current expendable launch systems.
- Develop a new expendable launch system.
- Develop a new re-useable launch system.

The SLMP led to the signing of National Space Transportation Policy Directive PDD/NSTC-4 by President Clinton in August 1994, tasking DoD to provide an implementation plan for improving and evolving the current ELV fleet. In October 1994, DoD identified the EELV program as DoD's solution for meeting this new requirement.

During the same period, then Secretary of Defense William Perry made sweeping changes to DoD acquisition procedures and policy, significantly influencing EELV's system acquisition strategy and business operations. One of the key acquisition reform tenets was streamlining the government's role throughout the procurement cycle, replacing prescriptive government "oversight" of contractors with less intrusive collaborative "insight." This approach shifted greater responsibility to system providers, allowing them greater freedom and trade-space to determine the best processes, procedures, and resource solutions for satisfying their customers' requirements.

In parallel, Darleen Druyun, the Principal Deputy Assistant Secretary of the Air Force for Acquisition, championed USAF acquisition reform via a series of Acquisition Lightning Bolt Initiatives. Her "Bolts" form the backbone of EELV program and business strategy; and are "designed to streamline organizations, develop superior acquisition strategies, focus attention on risk management vs. risk avoidance, and encourage the use of teaming as an acquisition workforce multiplier." They also seek to encourage the broad application of commercial best practices, Civil-Military Integration, international partnering, innovative contracting, market research, and market-based solutions to reduce total ownership costs.

EELV's ultimate objective is to enhance the competitiveness of the U.S. launch industry in the international launch services marketplace by delivering more capable, more responsive launch solutions while simultaneously reducing launch costs.

EELV was conceived as a "system of systems" to improve operability while achieving significant reductions in launch site infrastructure and recurring operations and maintenance (O&M) costs. Today's heritage systems occupy 10 separate government-owned and -operated launch facilities. Through a "system of systems" application of modularity, commonality, standardization, and lean manufacturing and operations, EELV eliminates government-furnished property and dramatically reduces infrastructure and recurring O&M costs by requiring only three commercially owned and operated launch sites.

The single most important tool within the EELV "system of systems" design trade-space is Cost As an Independent Variable (CAIV). Both EELV contractors have made CAIV an integral part of all EELV system design, development, production, and operations activities since program inception. CAIV is a powerful tool, providing for the establishment of aggressive, realistic cost objectives and the equally aggressive management of all associated risks. The emphasis on CAIV is the major reason why EELV has been able to achieve its substantial life cycle cost-reduction goals and better position the U.S. commercial launch industry to be more competitive in the international marketplace.

The EELV program operates with an overarching management philosophy that firmly balances government and contractor requirements, operational risk management, and acquisition excellence with the day-to-day realities of developing commercially owned and operated products and services that can compete successfully within the highly competitive international launch services marketplace. EELV market and customer demands are matched daily with flexible and responsive launch solutions through the use of small government/contractor Integrated Product Teams (IPT) and contractor program documentation, thus eliminating the need and costs associated with government-specific Contract Data Requirements List (CDRL) information or formats.

Every member of the EELV program operates with the singular focus of adding cost-effective product and service value. As a result, the EELV program office is structured and staffed to actively measure, track, and minimize system development risks, recurring launch service risks, mission risks, and business risks, while allowing maximum flexibility for the contractors to efficiently conduct a program that meets EELV's dual-use requirements.

A key risk management objective is to continuously balance the needs of a market-driven, fast-paced development program with a strong emphasis on protecting fragile eco-systems surrounding launch sites and factories. EELV environmental improvements include redesigned launch trajectories for reduced noise and land impact or overflight, leak- and spill-resistant fuel systems, elimination of Ozone Depleting Substances, self-contained "green" factories, cleaner-burning engines, and aggressive environmental mitigation efforts at all EELV operating sites.

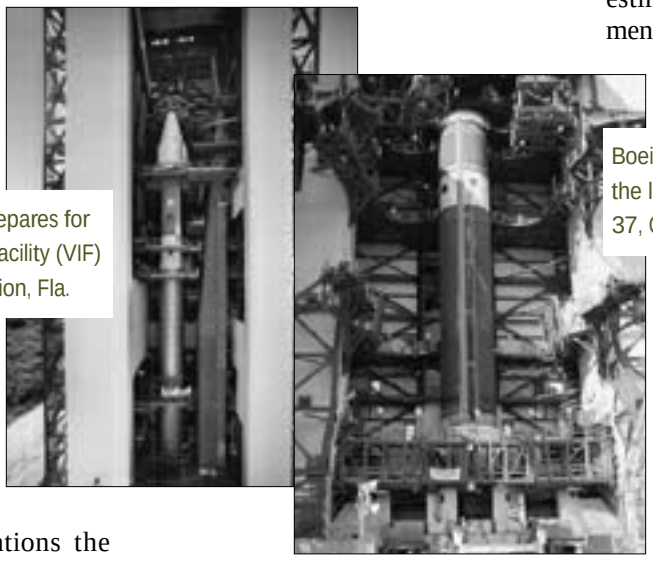
EELV's elimination of the large Titan-IV class solid rocket motors will improve launch site air and water quality by annually eliminating nearly six million pounds of toxic materials from launch operations. The RD-180 and RS-68 engines are more environmentally friendly, eliminating the need for 500,000

pounds of toxic propellants annually. An example of improved factory environmental design is the self-contained chemical treatment facility, cutting fluid/metal chip recycling center, and power plant at the Delta IV factory.

The EELV program represents a national commitment to reengineering the business of space launch through the innovative use of industrial partnering and cost sharing and the application of comprehensive business and acquisition excellence initiatives. The program is specifically responding to the SLMP by requiring a recurring operational life cycle cost reduction of 25 percent to 50 percent over current launch systems, while at the same time improving system reliability and availability.

In 1995, then Secretary of the Air Force (SECAF) Sheila Widnall designated EELV as one of her four SECAF Flagship Acquisition Reform Programs. Speaking of her 1995 source selection, she identified "[a]ward of the EELV contracts [a]s the first step in our nation's long quest to reduce the cost of space launch." In a few months, her vision will become reality with the first commercial launches of the Atlas V and Delta IV, marking the first time in nearly two generations the United States has fielded truly new families of launch systems.

EELV was conceived as a "system of systems" to improve operability while achieving significant reductions in launch site infrastructure and recurring operations and maintenance (O&M) costs.



First Lockheed Martin Atlas V prepares for flight in the Vertical Integration Facility (VIF) at Cape Canaveral Air Force Station, Fla.

Execution of a Modular Approach to Acquisition

The EELV program is being executed in a three-phased, streamlined development approach, leading to two commercially owned and operated commercial launch services capabilities. This phased approach, consisting of Low Cost Concept Validation (LCCV); Pre-Engineering, Manufacturing, and Development (Pre-EMD); and Engineering, Manufacturing, and Development (EMD)—now referred to as Development—along with a companion Initial Launch Services Module, has served to focus and maximize industry involvement and ownership, scope and minimize development risks, and capture and employ commercial best practices.

Low-Cost Concept Validation

In August 1995, $30 million in Firm Fixed-Price LCCV contracts were awarded to four companies: Alliant Techsystems, Boeing Defense and Space Group, Lockheed Martin Astronautics, and McDonnell Douglas Aerospace. The objectives of the LCCV module were to define system concepts, mitigate risks by trade analyses and technical demonstrations, complete system designs to a Tailored Preliminary Design Review (TPDR) level of maturity, and draft system design specifications.

Pre-Engineering, Manufacturing, and Development

In December 1996, a competitive down-select at the end of the 12-month LCCV phase resulted in the award of 18-month, $60 million Pre-EMD contracts to Lockheed Martin and McDonnell Douglas (subsequently acquired by The Boeing Company). Pre-EMD objectives included completion of risk-reduction demonstration efforts, system specifications, and draft product specifications; demonstration of critical manufacturing processes and submission of manufacturing plans; updated life cycle cost estimates; completion of an environmental analysis; and the successful completion of a Down-select Design Review (DDR).

Boeing Delta IV Common Booster Core on the launch pad at Space Launch Complex-37, Cape Canaveral Air Force Station, Fla.

Strategy Reassessment

By the spring of 1997, however, significant growth in commercial launch market opportunities and a corresponding desire by the EELV contractors to meet this new demand resulted in a reassessment of the original EELV rolling (4 to 2 to 1) down-select strategy. The original strategy, which was based on the SLMP conclusion that the commercial market could not support two launch systems, was structured as a government-funded cost plus $1.8 billion development program.

By April 1997, the Commercial Space Transportation Advisory Committee (COMSTAC) launch model projected worldwide demand for addressable commercial Geo-synchronous Transfer Orbit (GTO) launches to be 30 to 40 a year. The COMSTAC projections, when combined with Federal Aviation Agency

COL. ROBERT K. SAXER, USAF

EELV System Program Director
Space and Missile Systems Center

Col. Robert K. Saxer is the System Program Director, Evolved Expendable Launch Vehicle (EELV), Space and Missile Systems Center, Los Angeles Air Force Base, Calif. A 1984 graduate of the Defense Systems Management College Program Management Course, Saxer is Level III-certified in the acquisition areas of program management and systems engineering.

As Program Director, Saxer leads efforts to ensure that all EELV systems meet the Air Force Space Command's key performance parameters (mass-to-orbit, reliability, standardization), while reducing the cost of space launch by at least 25 percent over existing Titan, Atlas, and Delta launch systems.

At the cutting edge of acquisition excellence, the $18.8 billion EELV program is structured to simultaneously leverage commercial competition and international market forces to reduce development risk, dramatically shorten launch service delivery timelines, and incentivize industry capital investment.

A 1980 graduate of the U.S. Air Force Academy, Saxer holds an M.S. in Aerospace Engineering from Northrop University, an M.S. in Materials Engineering from the University of Dayton, and an M.S. in Public Administration from Harvard University. His military education includes graduation from the Air Command and Staff College and Industrial College of the Armed Forces.

Saxer's 21-year military career includes a number of assignments relating to acquisition and procurement and military space programs.

Prior to assuming his current position, he served as Deputy System Program Director, Evolved Expendable Launch Vehicle Program Office, Space and Missile Systems Center, Los Angeles Air Force Base. That position was preceded by an assignment as Director, Titan Launch Vehicles, Air Force Program Executive Officer for Space, Pentagon, Washington, D.C.

He has also held the positions of graduate assistant, project engineer, project manager, executive officer, program manager, and Research Fellow at Harvard University.

His military awards and decorations include the Meritorious Service Medal with two oak leaf clusters, the Air Force Commendation Medal with four oak leaf clusters, and the Air Force Achievement Medal.

Low Earth Orbit (LEO) launch projections and known NASA and DoD missions, nearly tripled the 1994 SLMP forecast. In addition, the Air Force saw an opportunity to "cost share" development and to further optimize the EELV contractors' system design tradespace by turning over all launch base operations and maintenance responsibilities.

As a result, in November 1997 then Acting Under Secretary of Defense (Acquisition & Technology) R. Noel Longuemare approved a revised acquisition strategy that: 1) positioned DoD to procure commercial launch services instead of separate production and launch operations efforts; 2) maintained an ongoing competition between two contractors rather than down-selecting to one; and 3) provided for government and contractor sharing of the costs of developing a national launch capability that meets government requirements and is commercially marketable. Air Force Space Command subsequently issued a new EELV Operational Requirements Document (ORD) in September 1998, formally documenting this shift in operational philosophy to commercial launch services.

Both DoD and the EELV contractors viewed the acquisition strategy changes as win-win. Each contractor would receive partial development funding, retain ownership and control of their system designs and launch operations, and could target their development and investment strategies to meet their corporations' long-term space transportation objectives.

DoD benefited from the opportunity to retain two proven launch service providers for less than the price of one, captured over $500 million in immediate development cost savings, and leveraged the commercial satellite market to reduce overall program risk. Industry would now fund the additional $3 billion required to bring both systems to market; and if market conditions turned and one EELV provider exited, DoD would be no worse off than if it had stayed with the original down-select strategy. DoD also benefited significantly from the commercial satellite industry's mounting demand for launch services. Viewed as EELV's silent "third partner," the satellite industry's demand for reliable space lift and willingness to "jump" from one launch service provider to another in the event of a launch failure have made reliability a program touchstone.

A single launch failure usually results in the loss of six to eight months of launch service revenue as well as the total loss of all recurring revenue generated by the affected commercial satellites. Although launch/satellite insurance is available and is usually purchased to protect corporate financial interests, the potential adverse financial and publicity impacts associated with launch failures are sufficient to encourage the EELV contractors to make mission success a top program priority.

MARKETING EELV COMMERCIALLY

Prior to the completion of the Pre-EMD module in May 1997, each contractor

matured their system designs and realigned their corporate business plans, targeting their development efforts toward a commercial launch capability they could sell in the growing and highly competitive lucrative world market. The government would be only one of many customers, constituting approximately 30 percent of each EELV contractor's commercial base.

In parallel, the EELV program office began exploring various source selection criteria, contracting options, and business strategies capable of striking the appropriate balance between industry's desire to build intermediate-class launch vehicles for the commercial GTO portion of the market and DoD's need for medium and heavy lift capability. To influence this now mostly commercially funded development of a dual-use launch system, the government moved toward a unique value-added contractual arrangement that recognized the contractors' extensive experience in providing commercial launch services (Delta II and Atlas II) and their need for financial and design flexibility to meet both customer needs and changing market conditions.

This included partially funding (cost sharing) the development effort, leasing and licensing launch base properties (including real property, launch pads, and existing buildings) to the contractors; and turning over all mission integration, launch operations, and launch site maintenance to the contractors under a set of commercial launch services contracts. This arrangement allowed for an equitable allocation of these costs over the entire EELV customer base (both government and commercial).

Because of the tremendous benefit to the contractors in marketing the EELV commercially, the government decided to limit its development funding to no more than $500 million each. The contractors agreed to contribute additional funds of their own, as necessary to bring their national launch capability online, in exchange for full ownership rights and control of both EELV systems.

Built on time and on budget via a unique anchor-tenant relationship, the Delta IV and Atlas V systems represent the collective commitment of both DoD and the U.S. space launch industry to deliver high-performance, assured, affordable access to space.

The government considered $500 million in development funding to be an appropriate amount based on extensive contractor communications and the government's desire to establish a fair, reasonable, and compelling business arrangement that would: 1) incentivize the contractors to meet government requirements; 2) facilitate the government's 25 percent or greater cost savings goals; 3) allow each contractor to close its business case and receive corporate approval and bank financing; and 4) acknowledge EELV as a dual-use, national launch system.

Source Selection

During the summer of 1998, the EELV program conducted an exhaustive source selection, which evaluated each contractor's ability to complete development as well as its ability to provide commercial launch services for up to 30 USAF and National Reconnaissance Office satellites. Each contractor was first required to demonstrate its development plans would meet all system performance requirements. Once this was verified, each contractor's launch services offerings were evaluated for price reasonableness, business terms and conditions, ability to execute the services, and industrial base. All four evaluation areas were considered of equal value.

The industrial base area assessed the value of assured access to space and the long-term benefits gained by maintaining two competitive launch service suppliers. Although the government's intent was to maintain ongoing competition, the government reserved the right throughout the source selection process to select both, one, or none, depending on the quality of the proposals received. Special reduced development funding and limited launch service award provisions were also included as part of the solicitation should one of the contractors choose not to build a new launch facility on the West Coast.

Engineering, Manufacturing, and Development

In October 1998, the EELV program received Milestone II approval after verifying successful completion of all Pre-EMD exit criteria and a 20-year life cycle cost savings of $6.2 billion (approximately 31 percent) over heritage systems.

Award of Contracts

On Oct. 16, 1998, the USAF awarded two $500 million Development agreements using Other Transaction (OT) authority and two tailored Fixed Price Initial Launch Service (ILS) FAR Part 12 delivery order contracts. A $500 million development OT and a $1.38 billion ILS contract for 19 launches were awarded to The Boeing Company. Lockheed Martin received a $500 million development OT as well as a $650 million ILS contract for nine launches. The period of performance for the Development effort is fiscal 1999 through fiscal 2003.

The ILS contracts support the procurement of commercial launch services resulting from the Development agreements

through fiscal 2010. The OT agreements and ILS contracts were awarded simultaneously to establish a formal anchor-tenant relationship between the government and EELV contractors. Concurrency of the OT and ILS awards also permitted the government to take full advantage of competition to obtain quantity discounts, while encouraging full corporate support and financial backing from the EELV contractors.

The ILS contracts with both providers contain common terms and conditions that define the commercial business relationship and application of the contracts to all EELV launch services. The benefits include: a single standard of quality; full funding traceability by mission and source of funds; quantity discounts for economically efficient buys; a single, streamlined government-to-contractor interface; real-time sharing of lessons learned; pre-negotiated launch postponements and delays; and guaranteed most-favored-customer pricing.

Each launch service is implemented via a separate contract delivery order with its own mission-unique statement of work and corresponding specifications established by the mission owner. Each delivery order for a launch service has a standard 24-month period of performance. Individual launch services plans, however, are highly flexible and can be tailored to accommodate spacecraft customer needs and launch dates. Launch service activities for nine government missions are currently underway to support government launches starting in 2002.

Leasing, Licensing, Support Agreements

To complement the OTs and ILS contracts, the USAF executed real property leasing, licensing, and support agreements with the EELV contractors for land and facilities use and operations at Cape Canaveral Air Force Station, Fla., and Vandenberg, Air Force Base, Calif. These arrangements supported the program objectives of contractor facility ownership and commercial launch services, while permitting the EELV contractors' increased financial flexibility in their corporate capital development accounts.

The OT agreements and launch base leases allow both contractors to finance their launch site capital improvements using low-cost third-party financing and facility lease-backs. Both EELV contractors have investment/financing agreements with Space Port Florida, allowing them to recover several hundred million dollars of current year funding. Similar financial arrangements are being explored with the California Space Port authorities.

The government's involvement in each company's EELV development effort was implemented via OT agreements entered into under the prototype project authority of Section 845 of the *National Defense Authorization Act of FY 1994*. In conducting the prototype project, each EELV contractor will develop a family of launch vehicles; construct launch pads capable of processing and launching all vehicle configurations intended to be launched from that site; establish a standard booster-to-satellite interface; and deliver launch services that reduce the recurring Life Cycle Cost for launches between fiscal 2002 through 2020 by 25 percent over existing launch systems. The flexibility associated with an OT agreement and its treatment of "best efforts" performance guarantees and contractor development costs (which in this case are largely contractor-financed) are the principal reasons an OT agreement approach was implemented.

The OT authority previously cited allows the participants to manage this program as a "best effort" commercial development using best commercial practices; Generally Accepted Accounting Principles; and commercial sources of investment, including Independent Research and Development (IR&D) financing, debt, capital financing, and third-party financing. Neither EELV contractor would sign up to a guaranteed performance arrangement for development (firm fixed-price or otherwise) because their fiscal exposure would be unlimited in meeting the program goals, and GAAP would have required them to declare the difference between the government's $500 million in funding and their estimated total development cost (well in excess of $1.5 billion each) as a loss in the year they signed the OTs.

Additionally, because the cost-sharing acquisition approach relies so significantly on contractor funding, international sales and service, commercial operations and maintenance, and protection of the EELV contractors' intellectual property and proprietary data, neither contractor was willing to give up their rights in data. As a result, government approval rights of designs, processes, and procedures, and rights to patents, intellectual property, technical data, and computer software developed for the remainder of the EELV program are limited. Insight to this information, however, is available in accordance with the terms and conditions of the OTs and ILS contracts.

Insight

EELV *insight* is defined as the government gaining an understanding of the contractors' progress through watchful observation. To enable insight, the contractors provide government EELV personnel access to all matters relating directly to the performance of the EELV OTA and ILS contracts. Government personnel may attend meetings, test activities, or configuration control board meetings and offer feedback for the contractors' consideration, but do not have approval/disapproval rights. The government, as a partner in the EELV investment, has complete access to contractor technical and programmatic data, and may reject any flight hardware it believes does not conform to mission needs at replacement cost.

As a result, there are no formal deliverable documents/CDRLs on the EELV contracts. However, the EELV program office has virtually unlimited access to all but some highly sensitive and proprietary cost and pricing data. For example, the U.S. Government participated fully at all levels of over 100 system and subsystem Delta IV and Atlas V Critical Design Reviews (CDR), and

had complete detailed insight to provide value-added input/action items as a full partner in the systems engineering process.

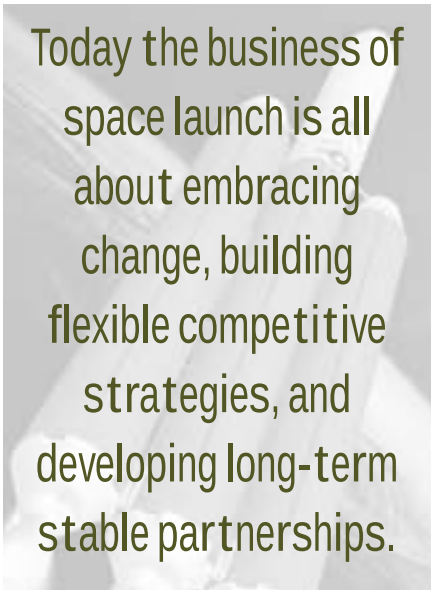
EELV Financial Management

Because both EELV contractors have a compelling financial interest in ensuring performance of the Development OT and ILS contracts, significant attention is given to the EELV program's financial management structure, the contractor business cases, and the OT Development and ILS payments process. Combined, the EELV contractors are spending over $3 billion of company funds—much of it front-end loaded—to develop their launch systems.

As a result, the EELV Program Office has developed a set of comprehensive investment and financial analysis models to continuously evaluate the effect of changed market conditions on the contractors' Internal Rates of Return, Return on Investment, future launch service prices, and overall program life cycle cost savings.

The EELV program does not employ a traditional government Earned Value system. Instead, each contractor tracks program costs using its own internal accounting systems, and government OT payments are made to each EELV contractor based upon the successful completion of discrete development milestones. Each has well-defined success criteria, and each pre-negotiated payment milestone represents a significant event such as the completion of a system design review, major test series, major facility, or actual launch. ILS payments are schedule-based and are made at pre-negotiated points during the standard 24-month period of performance, consistent with commercial industry practices.

Overall, this funding approach provides exceptional value to both the government and contractors. The contractors benefit from the lump sum payments, accelerated cash flow for finishing early, and streamlined government payment process, which usually pays within seven working days or less. The government enjoys the benefits of having only a handful of annual payments to track; nearly 100 percent obligation and liquidation within each fiscal year; the ability to close all current fiscal year unliquidated obligations within a few months of the end of each fiscal year; and a financial staff of only 15—less than half the size of most major USAF program offices.



Although EELV financial management has been greatly simplified, among the key challenges affecting the program's long-term viability are the protection of key financial and contractual components of the contractors' business cases, and maintaining a sustainable competitive strategy under continuously changing market conditions. The EELV program office works very closely with both contractors and satellite customers to forecast market demand, capture business case changes, address industrial base issues, and protect key internal financial data. However, unlike other ACAT ID programs where development and recurring unit sales and operations and maintenance costs are fully funded by the government, EELV lives in a state of continuous competition, drawing more than 50 percent of its sales and financial support from the international marketplace.

While competition is a key enabler for reducing overall program risk, providing assured access and meeting the government's life cycle cost goals, these benefits are only achievable through the successful commercial sale and launch of Delta IV's and Atlas V's. Maintaining a proper balance of the commercial market's "risk-reward" investment equation requires constant communication and planning to flexibly react to evolving business conditions. To date, more than 60 EELV launch services have been sold to a variety of commercial and government customers, and more are expected as Delta IV and Atlas V enter service in mid-2002.

EELV—Two Families of Vehicles

The Boeing Delta IV and Lockheed Martin Atlas V represent a giant step forward in the design, development, production, and operation of launch systems. Each EELV family seamlessly blends government and commercial requirements, vehicle commonality and modularity, standardization, and lean manufacturing and operations to improve overall system operability, reliability, and performance while achieving significant reductions in recurring costs.

Through a combination of heritage lessons learned, lean "value stream" management, and process reengineering, both EELV contractors have achieved dramatic reductions in touch labor, piece parts, single point failures, suppliers, facilities, and processing time. What used to take weeks and months is now accomplished in hours or days thanks to simpler producible designs, automated focused factories, dedicated transportation systems, off-pad vehicle and payload processing, and integrated training centers and data enterprise networks.

Lockheed Martin Astronautics Atlas V

The Atlas V family of vehicles is built around a structurally stable Common Core Booster™ (CCB) powered by the Russian RD-180 engine and the heritage Atlas Centaur upper stage and Pratt & Whitney RL-10 engine.

RD-180

The RD-180 is produced by RD AMROSS in Khimky, Russia, as a joint venture between Pratt & Whitney of the United States and NPO Energomash of Russia.

Developing 860,000 lbf (3.8 MN) thrust at sea level, it uses liquid oxygen/RP-1 propellants (kerosene), and is the only high-thrust staged combustion liquid oxygen/RP-1 engine in production.

The RD-180 engine has been extensively tested, accumulating over 29,000 seconds of test time on 36 test engine builds and 13 production engines. Capable of continuous throttle between 47 percent and 100 percent of nominal thrust, it allows for substantial control over launch vehicle and payload environments. Flight proven on the first Atlas IIIA mission in May 2000, the RD-180 is scheduled to fly again in February 2002 on the first Atlas IIIB mission.

Medium, Intermediate, Heavy Vehicle Classes

The Atlas V family consists of medium, intermediate, and heavy vehicle configurations; and each includes a standard payload interface. Together they offer the flexibility to meet mass-to-orbit requirements for missions from low earth orbit to GTO. By simply adding vehicle components such as solid rocket motors or upper stage engines, Atlas V's flexible "dial-a-ride" designs allow a payload customer to place thousands of pounds of additional capability on-orbit for a marginal cost.

- The medium vehicle class or Atlas V 400 series consists of a four-meter payload fairing, a single CCB with RD-180 main engine, and common Centaur upper stage with one or two Pratt & Whitney RL10A-4-2 engines. From one to three 360,000 lbf thrust Aerojet strap-on solid rocket boosters may also be added for additional mass-to-orbit performance. The basic 400 series vehicle without solids is capable of placing 10,913 pounds into GTO using a single RD-180 and RL-10 engine. This is a 2,713-lb performance increase over Atlas IIAS, which requires nine engines to carry 8,200 to GTO.
- The Atlas 500 intermediate series consists of a Contraves Space composite 5.4-meter payload fairing, a single CCB with RD-180 main engine, as many as five solid rocket boosters, and common Centaur upper stage with RL-10A 4-2 engine (s). The 500 series with five solids is capable of placing 19,114 lbs into GTO and flying many of the payloads currently manifested on the Titan IV.
- The Atlas V heavy launch vehicle consists of three CCBs, each with an RD-180 main engine, Centaur upper stage with RL 10A4-2 engine(s), and a composite 5.4-meter payload fairing. The Atlas V HLV can place over 14,000 lbs directly into Geo-Stationary Orbit (GSO), a 1,300-lb increase over Titan IV.

Increased Performance, Mission Reliability

To increase Atlas V performance and mission reliability, the CCB is 100 percent common across all vehicle types, and over 5,200 parts and 300 suppliers have been eliminated—a 35 percent part count reduction compared to Atlas IIAS. The Centaur upper stage fuel tank has been stretched 10 feet, redundant avionics added, and a new engine-mounting bracket built that can easily be configured to hold either one or two RL10A-4-2 engines to optimally meet various mission requirements.

A dual engine spark igniter system has also been engineered to ensure prompt restarts, and a hydrazine attitude control system provides precise on-orbit maneuvering. The 5.4-meter Payload Fairing (PLF) is a new design derived from the Ariane V fairing manufactured by Contraves Space, Zurich Switzerland, and will be offered in two lengths: one optimized for communications satellites and the other to accommodate large-volume spacecraft missions. The 4-meter PLF is the same fairing used on the Atlas II and III and is manufactured in Harlingen, Texas. The Centaur upper stage will be mated to the CCB via a composite interstage adapter built by CASA in Madrid, Spain. Approximately 25 percent of Atlas V vehicle hardware is procured from foreign suppliers.

Atlas V System Development

Altas V system development has taken a low risk, evolutionary approach to achieve improved operability and reliability. This low-risk approach is centered on the common element design concept, which includes the RD-180 engine, CCB, common Centaur, and common avionics. Rather than attempting to develop and fly an entirely new vehicle all at once, Lockheed Martin has gradually introduced each of these new elements into the Atlas family, using the Atlas III series of rockets as a bridge between the workhorse Atlas II and the new Atlas V.

In addition, heritage Atlas II hardware has been augmented by extensive development testing of new or modified Atlas V hardware. Numerous development and qualification tests have been performed in the last several years. One significant test was the RD-180 stage hot firing at Marshall Space Flight Center, Ala., in late 1998 to support the Atlas III development. The successful Atlas IIIA flight in May 2000 demonstrated many Atlas V subsystems, and the upcoming Atlas IIIB will fly the newly designed Atlas V stretched Centaur upper stage.

Atlas V Streamlined Manufacturing

Lockheed Martin has three major Atlas V manufacturing facilities located in San Diego, Calif.; Harlingen, Texas; and Denver, Colo. Each has its specialties, and all are part of a lean "value stream" production flow.

- The San Diego facility is a world-class welding facility that specializes in resistance and fusion welding of Centaur propellant tanks.
- Harlingen has a diverse array of specialties and is responsible for the fabrication and assembly of major structures, such as the RD-180 aft transition section, 4-meter PLF, and PLF adapters.
- Denver operations focus on aluminum welding of the structurally stable CCB tank, launch vehicle component installation, final vehicle assembly, and system acceptance testing before transport by Russian *Antonov*-124 aircraft to the launch site in flight-ready configuration.

Significant tenets of the Atlas V lean manufacturing approach are designing for producibility and the broad appli-

cation of statistical techniques for analyzing and measuring process variation. Mission success is dependent on reliable processes and, in turn, process reliability is key to manufacturing cycle time reduction.

From the program's beginning, USAF manufacturing engineers have been core Atlas V IPT members responsible for influencing the design to improve producibility and work flow. Lockheed Martin has responded by using "Six Sigma" and Kaizen principles to eliminate waste, focus on predictable processes, and measure output using a variety of proven and well-established metrics, including process capability (Cpk) metrics measured against defects per million opportunities. Kaizen is a culture of sustained continuous improvement to eliminate waste in all the systems and processes of an organization. Kaizen involves everyone in the organization working together to make improvements without large capital expenditures.

Key processes are under control and show continuous variability reduction. Atlas production cycle times have been reduced from 48.5 months for an Atlas II to 18 months for the first Atlas V. The Atlas V steady state production goal is 10 months. Lockheed Martin has achieved this dramatic reduction by eliminating 70 percent of the factory touch labor. It now takes only three people working three months on a single eight-hour shift to complete the final assembly, checkout, and testing of an Atlas V.

Similarly, structural tank welding that required over 100 piece parts and thousands of rivets, and was done manually by 20 people for a Titan IV core now requires only 16 parts for a CCB and is accomplished by an automated welding machine supported by two people. Perhaps the most significant difference from heritage launch systems is that Atlas V flight hardware will now be shipped to the launch site in a flight-ready configuration. The Atlas V CCB and Centaur upper stage are completely assembled and tested at the Denver factory before shipment. As a result, most of the launch base infrastructure and personnel required to support the production assembly, checkout, and testing of heritage Atlas and Titan vehicles have been eliminated.

To date, more than 60 EELV launch services have been sold to a variety of commercial and government customers, and more are expected as Delta IV and Atlas V enter service in mid-2002.

Atlas V Launch Facilities and Operations

The Atlas V system has been designed for very efficient launch site processing using just three facilities. Receiving, inspection, and launch operations are conducted in the Atlas Space Operations Center (ASOC). Off-pad vertical integration of the launch vehicle occurs in the new 280-foot-tall Vertical Integration Facility (VIF), and parallel processing and encapsulation of satellites occur in separate customer-owned or -leased facilities.

Lockheed Martin has reduced launch site processing facilities from 36 for Atlas II and Titan IV to three; required launch site personnel from 1,200 to less than 200; and the number of days on pad from 28-38 days for Atlas II and 180 days for Titan IV, to just one day for Atlas V. Off-pad processing time for Atlas V has been reduced to 18-26 days, depending on the configuration.

Once the CCB and Centaur upper stage have been stacked, the encapsulated payload is transported to the VIF and mated to the launch vehicle. Approximately 16 hours prior to launch, and after a combined systems test, the fully stacked and integrated Atlas V/encapsulated payload is transported, using the Mobile Launch Platform (MLP), to the "clean launch pad" at Space Launch Complex 41 (SLC-41)—a short distance away.

Payload services are provided by a payload services van, which accompanies the integrated vehicle to the pad. Once in position, the MLP accepts nitrogen, helium, and liquid oxygen via auto-couplers resident within the pad complex. All launch vehicle configurations use common processing procedures, and are capable of launching from the same "clean pad."

The Atlas V launch team is currently conducting system activation and pathfinder checkout operations at SLC-41, Cape Canaveral. The first Atlas V flight hardware arrived at the Cape in September 2001 and recently completed two full hardware integration cycles in the VIF, including the "soft" mate of an encapsulated payload in less than four days. Atlas V is now undergoing the first of three planned "wet" dress rehearsals in preparation for a May 2002 first launch.

Along with beating the planned timeline, the assembly operation required no shims, providing further confidence that Lockheed Martin's lean manufacturing approach is taking hold and the launch pad throughput timeline requirements will be met. The execution timeline for a recurring Atlas V launch service is normally 24 months from launch order. Payload integration, data exchanges, reviews, schedules, and operations are completely documented and consolidated for each mission in CD-ROM Launch Services Plans (LSP). The LSP provides a detailed road map of all activities required to execute the launch service for a particular mission.

The Boeing Company Delta IV

The Delta IV family of vehicles is built around a 5-meter-diameter Common Booster Core (CBC) powered by the new Boeing-Rocketdyne RS-68 main engine and a modified Delta III cryogenic upper stage powered by a Pratt & Whitney RL-10B-2 engine.

RS-68

The RS-68 is a 650,000 lbf (2.9 MN) thrust engine using liquid oxygen/liquid hydrogen propellants in a basic gas generator cycle. Twice as powerful as the Boeing-Rocketdyne Space Shuttle Main Engine (SSME), the RS-68 has accumulated over 20,000 seconds of testing on 20 engine builds and three production engines. The RS-68 operates at two set points—58 percent and 101 percent power—during normal operations. The amount of dwell time at each power setting is determined by mission profile and the need to control payload environments during ascent.

Medium, Intermediate, Heavy Vehicle Classes

Delta IV is available in three major classes; each has a standard payload interface and each vehicle type has the same "dial-a-ride" modular design capabilities as Atlas V.

- The Medium class vehicle consists of one CBC, a 4-meter cryogenic upper stage with a single RL-10B-2 engine, and a 4-meter PLF. It is capable of placing 9,255 lbs into GTO.
- The Intermediate, or Medium Plus vehicles, consist of a single CBC, two or four Alliant Techsystems 275,000 lbf thrust strap-on solid rocket motors (graphite epoxy GEM-60), a 4- or 5-meter upper stage with a single RL-10B-2 engine, and either a 4- or 5-meter PLF. The Medium Plus class of Delta IV has been designed to carry up to 14,525 lbs to GTO.
- The Delta IV Heavy Lift Vehicle consists of three CBCs, a 5-meter cryogenic upper stage, and a 5-meter fairing. The 5-meter PLF can be either an isogrid aluminum fairing based on the existing Titan IV fairing, or a newly developed composite fairing built by Alliant Techsystems in Iuka, Miss. The 4-meter fairing is the existing Delta III composite fairing lengthened by three feet.

System Reliability, Overall Vehicle Costs

To improve system reliability and reduce overall vehicle costs, Boeing has dramatically reduced part counts, suppliers, and touch labor. The RS-68 engine has 95 percent fewer parts than the SSME and requires only 8,000 hours of touch labor to assemble vs. 171,000 hours for the SSME. Its advanced design has been enabled by new manufacturing technologies that permit the use of cast vs. welded parts, lower operating temperatures and pressures, and no special coatings. Parts for the Medium Plus and Heavy CBCs are 88 percent and 93 percent common relative to the Medium CBC. All are manufactured using automated tools and a common factory production line. The CBC includes innovations such as friction stir welded tanks, spun-formed domes, and use of composite structures.

Mission risk and cost have been further reduced through the use of a modified Delta III upper stage, which is 85 percent common to the Delta IV design. Much of the Delta IV avionics and flight software has also flown on the Delta II and Delta III, and only 7,000 lines of flight software are required to fly the Delta IV.

Delta IV System Development

Boeing has taken an evolutionary approach to Delta IV system development, balancing the use of heritage hardware with development of new hardware. The highlight of the new development project is the RS-68 main propulsion system—the first new American large-class cryogenic engine in almost 30 years.

The RS-68 engine development involved extensive testing of major components such as turbo pump, gas generator, injector, and heat exchanger, with the goal of verifying performance parameters such as thrust, specific impulse (Isp), mixture ratio, and main combustion chamber pressure (Pc).

A series of hot- fire tests were conducted at the Air Force Research Lab (AFRL), Edwards Air Force Base, Calif., and at the NASA Stennis Space Center (SSC), Miss. Each flight engine is acceptance hot-fired at Stennis prior to delivery to the focused factory in Decatur, Ala., for integration into the CBC.

In addition to the engine-level tests, Boeing ran a series of five static fire tests with a full-up CBC. These tests demonstrated robustness of the design and the performance of the entire booster, with only consumables being replaced between tests. A formal on-pad, hold-down, hot-fire test of the first flight Delta IV will be conducted days before first launch to further reduce risk and fully verify all pad and vehicle operations.

Delta IV Streamlined Manufacturing

Boeing has revolutionized the manufacturing and production of launch vehicles. Instead of modifying their existing manufacturing facilities, Boeing took the lessons learned from their heritage Delta II/III experiences and started from scratch, laying out an integrated Delta IV manufacturing, assembly and test, and transportation flow.

Today, Delta II vehicle components travel over 8,174 miles during a 23-month manufacturing journey before they arrive at Cape Canaveral for final assembly and test prior to going to the launch pad. The Delta II journey to Vandenberg Air Force Base (VAFB) is even longer given the vehicles must first go to the Cape for assembly before they can be transported to the West Coast.

For Delta IV, Boeing built a "green field" Focused Factory in Decatur, Ala.—one mile from the Tennessee-Tombigby Waterway and centrally located near key suppliers at Stennis (RS-68) and Iuka, Miss. (composite CBC shells and PLFs). Raw materials and finished parts enter one end of the 1.5-million-square-foot facility, travel in a single piece flow via a 2.1-milelong moving assembly line, and a completely assembled booster rolls out 15 months later. The Focused Fac-

tory, which is capable of producing 40 CBCs a year, has increased efficiency and reduced cycle time through lean manufacturing and optimized workflow processes.

Boeing has emphasized the application of statistical techniques for analyzing/measuring process variation as well as the management of key manufacturing processes using capability metrics. "Team Decatur" actively pursues continuous improvement of their world-class factory and processes; the most recent example is the Delta IV Engine Section Team, which was able to reduce floor space by 15,000 square feet, flow days by 32 percent, and required labor by 69 percent. The result is all eight CBCs currently in flow have non-conformance rates better than any heritage launch vehicle.

Full Integration, Assembly and Check Out (IACO) testing occurs before each vehicle leaves the factory, ensuring only fully tested and ready-to-fly vehicles are loaded on the *Delta Mariner* and delivered to the launch site. The *Delta Mariner* is Boeing's specially built dedicated transport vessel. Constructed in 18 months under a partnership with Foss Maritime, the *Delta Mariner* is a 308-foot-long seagoing vessel, specifically designed to carry up to three Delta IV CBCs. Unlike Lockheed Martin, who had to limit the size of their booster core to meet size restrictions of the C-5 and Russian *Antonov,* Boeing was able to make their CBC 5 meters in diameter and 160 feet long, greatly simplifying their overall design.

Boeing's key partner in the Focused Factory is the State of Alabama, which provided real estate, financial, transportation, workforce, and training support. Boeing, in partnership with the State of Alabama, has developed an extensive training program with nearby Calhoun College. All personnel, including Defense Contract Management Agency (DCMA) representatives, go through an eight-week course and participate in on-the-job-training on the factory floor before they become part of "Team Decatur." Due to Delta IV's lean manufacturing approach, only three DCMA representatives are resident in the factory. All Decatur data are available via Boeing's GENYSIS enterprise data network.

Delta IV Launch Facilities and Operations

Boeing has designed the Delta IV system for efficient launch site processing in a total of three different facilities as compared to the 43 facilities used for heritage Delta II/III.

- Receiving and inspection for the Delta Cryogenic Upper Stage (DCUS) and launch operations are performed in the Delta Operations Center (DOC).
- CBC receiving and inspection, IACO, and final assembly and mating of the CBC and DCUS are performed in the horizontal position in the Horizontal Integration Facility (HIF). The horizontal booster processing flow and vehicle stage mating improve operations by allowing for parallel integration capability, reduced hazardous lifting operations, and reduced pad time when compared to heritage Delta II/IIIs that are assembled on the launch pad. Parallel processing and encapsulation of satellites occurs in separate satellite customer-owned or -leased facilities, not in a Delta IV facility.
- Boeing will launch the Delta IV vehicles from a new 330-foot state-of-the-art Space Launch Complex-37 (SLC-37) at Cape Canaveral, and from the extensively modified Space Launch Complex-6 at VAFB. Total launch vehicle time at the launch base is less than one month, with only 8-11 days on the launch pad, depending on vehicle configuration. Each launch pad is capable of launching all Delta IV configurations, and launch pads are virtually standard between the Cape Canaveral and VAFB launch sites.

The Delta IV launch team is currently conducting system activation, vehicle erection, and pathfinder checkout operations at SLC-37. Unlike Lockheed Martin, which is using the first flight article as a pathfinder, the Boeing Team is using the Static Fire Unit that arrived on May 29, 2001.

The first Delta IV flight hardware arrived at the Cape in December 2001 and recently completed a full hardware integration cycle in the HIF. Along with beating the planned timeline, the assembly operation was flawless, providing further confidence that Boeing's lean manufacturing approach is in place and the launch pad throughput timeline requirements will be met when the first flight Delta IV is erected at SLC-37 in February 2002.

The execution timeline for a Delta IV launch service is normally 24 months from launch order. Payload integration, data exchanges, reviews, schedules, and operations are completely documented and consolidated for each mission in a CD-ROM Integrated Mission Services Plan (IMSP). The IMSP provides a detailed road map of all activities required to execute the launch service for a particular mission. And like Atlas V, the Delta IV also includes the EELV standard payload interface.

Integrated Risk Management and Mission Assurance

The EELV program includes an aggressive and proactive risk management program to identify, assess, mitigate, and report system development risk, recurring launch service risk, mission risk, and business risk. The EELV acquisition strategy was specifically developed to incrementally address these risks as the program progressed from LCCV through Pre-EMD, Development, and ILS.

To minimize development risks, and increase the government's assurance of meeting all objectives in a "best efforts" business environment, the EELV program tied payments to performance, established ILS performance commitments and contingency launch service backups, required successful completion of both a Tailored Critical Design Review and Design Certification Review, established significant term liabilities, and tied final milestone payments to the first two launches.

Other risk mitigators include the presence of two competitors, the sale of launch services to other customers, the contractors' substantial investment in the program, and the fact that contractor investments were heavily weighted toward the beginning of the Development effort.

The EELV risk management process has been carefully structured to identify and address all program risks. Technical risks are captured within the program's mission assurance process. Mission assurance spans the technical continuum from contractor design, development, and qualification activities, through production, integration, launch processing, launch operations, and post-flight analysis.

The EELV mission assurance process relies upon the cooperative relationship and integrated activities of the contractor and government organizations. Through the application of acquisition excellence initiatives, innovative contracting strategies, and close-ended funding strategies, the EELV program aggressively reduces business risk.

Balancing competing business, commercial market, and financial incentives and penalties to ensure all risks are adequately addressed is the key business risk management challenge.

Technical and schedule risks associated with the EELV development program are inherently lower than those of most new technology programs based on the fact that the EELV program is evolving existing technology. The basic premise of the EELV acquisition strategy is to minimize the risks associated with developing a new launch capability by using evolved designs based on proven launch systems and existing technologies, and benefiting from the lessons learned from heritage vehicles.

Successful execution of launch services requires the integration of more than just the launch system, which includes the launch vehicle, launch facilities, and support equipment. It requires integration of the government-owned and -operated range infrastructure, program security requirements, public safety and protection of government assets, environmental regulation, and foreign involvement risks. Management of risks such as safety, security, and environmental considerations are integrated into the overall risk management activities associated with delivering flightworthy hardware to the launch site, and the processes and procedures needed to provide maximum assurance of successful delivery of a payload to its prescribed orbit.

Important tools in the execution of the risk management process include an active program office Risk Management Council, Aerospace Corporation Independent Risk Assessments, and insight and participation in the contractor monthly Risk Management Reviews.

All program risks are formally documented in "risk maps," which capture probability and severity. Each risk map is an event-based risk mitigation path defining the incremental steps that must be "burned down" to reduce risk to an acceptable level. All risk maps are under configuration control and are formally reviewed monthly to support EELV's overall mission assurance process and to determine manpower allocations and assignments.

The Risk Management Council conducts 30-, 60-, and 90-day look-aheads for each risk to ensure the appropriate technical support is available for each risk event. This process suports program office review of all current and future manpower requirements, as well as the Space and Missile Systems Center Commander's responsibilities under Operational Safety, Suitability, and Effectiveness.

Evolving Launch Services Environment

Maintaining a sustainable competitive business strategy under continuous changing market conditions is the most significant challenge for the EELV program as it transitions to recurring launch service operations. Market stability and demand are critical enablers for ensuring a stable workforce, strong supplier relationships, and mission success.

In the last 18 months, the EELV program has witnessed sizable market fluc-

tuations in commercial launch opportunities as demand for satellite bandwidth has fallen in favor of fiber optics, as deployment schedules for commercial satellite projects have slipped or been cancelled, and as other foreign launch service suppliers such as Sea Launch have entered the market. These factors have created a "supply greater than demand" environment, placing financial pressure on both EELV contractors to greatly reduce their launch service prices, profit margins, and earnings forecasts.

It was in this environment that Lockheed Martin came forward in December 1999 and requested certain requirements of the OT agreement be revised as provided for under the "best efforts" provision. Lockheed Martin determined that the reduced number of "addressable" commercial missions now forecast to be available in 2001-2006, made their continued investment in the EELV program no longer viable.

After several weeks of discussions and analysis, an independent Joint Assessment Team of government and industry officials concluded the current ORD and acquisition strategy were appropriate, but market demand had decreased and the long-term launch forecast did not support the need for two West Coast launch pads. Since the original EELV Development solicitation included a provision for not building a West Coast pad, and it was still beneficial for government to retain two launch service providers on the East Coast, then Principal Deputy Under Secretary of Defense for Acquisition, Technology and Logistics David Oliver concurred with Lockheed Martin's request. As a result, both the OT agreement and ILS contract were restructured to eliminate Lockheed Martin's requirement to build a West Coast pad.

In order to maintain competitive equity between Lockheed Martin and Boeing, adjustments were made to both EELV contractors' OT agreements and ILS contracts so that the maximum possible competition could be maintained for launch services from Cape Canaveral. Approximately 80 percent to 90 percent of all U.S. launches originate from the Cape.

In exchange for not completing the VAFB pad, two West Coast launch services originally awarded to Lockheed Martin were transferred to Boeing. Boeing was also awarded funding to build and fly a Delta IV Heavy Lift Vehicle (HLV) demonstration flight. The new requirement for this demonstration flight in fiscal 2003 was added due to market changes that now made the government the first user of a Delta IV HLV, and a desire by then Secretary of the Air Force F. Whitten Peters to reduce future government HLV mission risks. Despite the recent market fluctuations and the need to readjust contractor requirements, EELV's flexible contract structure and industry partnership continue to provide both contractors with sufficient motivation to maximize performance and market potential.

Lift-Off

In the next few months, the first of a new generation of launch vehicles will lift-off from Cape Canaveral. Built on time and on budget via a unique anchor-tenant relationship, the Delta IV and Atlas V systems represent the collective commitment of both DoD and the U.S. space launch industry to deliver high-performance, assured, affordable access to space. Together, the USAF, Boeing, and Lockheed Martin have brought substantial and fundamental change to the business of space launch in near record time; going from paper designs and "green fields" in Florida, California, and Alabama, to fully integrated and dedicated manufacturing, production, transportation, and launch site centers of excellence in 45 months.

The EELV Program Management Team has won several prestigious Air Force and Department of Defense awards, including the David Packard Excellence in Acquisition Award, the John J. Welch Jr. Award for Excellence in Acquisition Management, the Outstanding Strategic Acquisition Reform (STAR) Award, the Defense Standardization Program Outstanding Performance Award, and the Department of Defense Value Engineering Award.

EELV is now a reality because government and industry have successfully-merged their visions, strategies, requirements, and corporate investments in a complementary, yet cost-effective way. And the long-term benefits are already being seen. More than 60 launch services have been awarded; a dozen are actively underway, with five missions scheduled for launch in 2002; three of 10 heritage launch pads are scheduled for closure in the next few months; and thousands of pounds in additional satellite weight growth has been quickly addressed through the modular addition of a few strap-on solids at a nominal cost. Overall, EELV Program life cycle cost savings are now expected to exceed 50 percent, or $10 billion.

Today the business of space launch is all about embracing change, building flexible competitive strategies, and developing long-term stable partnerships. As EELV transitions to recurring launch services, balancing customer demands for responsive launch service solutions with sustainable competitive business strategies under ever-changing market conditions will be the program's biggest challenge.

Although government development funding is nearly complete, as with any successful partnership continued long-term targeted investments by both government and industry will be required to ensure a stable workforce, maintain a solid industrial base, and achieve mission success. All are necessary to meet the ever-rising expectations of EELV's many customers, shareholders, and financial partners; to add cost-effective product value; to increase mission reliability; and to deliver rapid on-orbit capability to both the commercial as well as the warfighter community.

Editor's Note: The authors welcome questions or comments on this article. To contact them, email *Robert.Saxer@losangeles.af.mil; James.Knauf@losangeles.af.mil*; *Linda.R.Drake@aero.org;* and *pete.portanova@osl.nro.mil*.

Canada Joins Joint Strike Fighter Effort

JIM GARAMONE

WASHINGTON, Feb. 7, 2002—The Canadian Ministry of Defense today signed a memorandum of understanding with the Defense Department to participate in the Joint Strike Fighter program.

Pete Aldridge, Under Secretary of Defense for Acquisition, Technology and Logistics, and Alan Williams, the Assistant Deputy Minister for Materiel, signed the agreement in a Pentagon ceremony.

Under the agreement, Canada will provide $150 million over the next 10 years for the system development and demonstration phase of the JSF program. Canada was also part of the concept demonstration phase from 1996 to 2001.

"We in the United States government treasure our relationship with our neighbor to the north," Aldridge said. "This is yet another example of our cooperative relationship across so many different programs. Our cooperation effort on Joint Strike Fighter will reinforce a longstanding and close relationship between our two countries and will serve to strengthen the interoperability of our industrial base."

Williams said the agreement would give Canada a window into the leading-edge technologies being developed in the JSF.

"Canada's decision to participate in the JSF program is yet another clear demonstration of the Canadian government's continuing commitment to North American security and industrial cooperation," Williams said.

Lockheed-Martin leads the JSF team, which includes Northrop Grumman and British Aerospace.

There are three variants of the JSF. The Air Force's F-35A version is a conventional takeoff and landing airplane to replace the F-16 Falcon and A-10 Thunderbolt II. It will partner with the F-22 Raptor. The Air Force plans to buy 1,763 of the aircraft.

Lockheed-Martin Joint Strike Fighter Photo by Tom Reynolds

The Navy's F-35B is a carrier-based strike fighter to complement the F/A-18E/F Super Hornet. It will replace earlier versions of the F/A-18 as well as the A-6 Intruder, which already has left the inventory. The Navy plans to purchase 480 JSF aircraft.

The Marine Corps, Royal Navy, and Royal Air Force need and want a short takeoff and vertical landing aircraft, dubbed the F-35C. The Marines want 609 of the new aircraft to replace their AV-8B Harriers and F/A-18 Hornets. The British want 150 to replace Sea Harriers and Tornado fighters.

Canada currently flies the CF-18 and plans on keeping them through 2017. The Canadians will assess their needs and decide which variant they need by then, Williams said.

Aldridge said The Netherlands, Italy, Norway, Denmark, and Turkey have also expressed interest in the JSF.

Editor's Note: This information is in the public domain at *http://www.defenselink.mil.*

Fourth Annual International Acquisition/Procurement Seminar—Pacific (IAPS-P)

September 23-26, 2002

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Seminar Registration Information

The Fourth Annual International Acquisition/Procurement Seminar— Pacific (IAPS-P) focuses on international acquisition practices and cooperative programs. The seminar is sponsored by defense educational and related institutions in the United States, Australia, South Korea, and Singapore.

The seminar will be held Sept. 23-26, 2002, at DAU-DSMC, Fort Belvoir, Va.

Those eligible to attend are Defense Department/Ministry and defense industry employees from the four sponsoring nations who are actively engaged in international defense acquisition programs. Other nations may participate by invitation. Pacific Rim (PACRIM) nations participating in previous seminars were Canada, Japan, New Zealand, and Thailand.

The IAPS-P is by invitation only. Those desiring an invitation who have not attended past seminars should fax DAU-DSMC a letter of request, on government or business letterhead, to (703) 805-3175.

If you have attended a past seminar, you can register by going to our Internet Web site at http://www.dsmc.dau.mil/international/international.htm. Qualified participants pay no seminar fee. Invitations, confirmations, and administrative instructions will be issued after May 1, 2002.

Contact a seminar team member for additional seminar information at:
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DAU Opens Its Doors in Huntsville, Ala.

Taking Education Directly to the Workforce

SYLWIA GASIOREK-NELSON

With the opening of the Defense Acquisition University (DAU) campus, Huntsville, Ala., on Feb. 1, DAU took a major step toward its goal of transformation in acquisition training by providing products and services to the community at major workforce locations. The official ribbon-cutting ceremony, hosted by Army Col. (P) James R. Moran, DAU Commandant, Fort Belvoir, Va., and James McCullough, Dean, DAU South Region, took place on Feb. 21.

Opening Remarks

In his opening statement, McCullough welcomed local government-industry officials from the Huntsville region, DAU directors, faculty, contractors, as well as distinguished guests participating in the day's events: Dr. Jerome Smith, DoD Chancellor for Education and Professional Development; Jim Flynn, Deputy Commander of the U.S. Army Aviation and Missile Command (AMCOM), Redstone Arsenal, Ala.; Dr. David Billings, Dean of College Administrative Science, University of Alabama at Huntsville (UAH); Maxine Maples, Director, Southern and Western Regions, Army Acquisition Career Management; and Ronald W. Boles, Chamber of Commerce, Huntsville, Ala.

"We are trying to open up a new facility and new capability within the Huntsville area and also the Southern region, which extends from the state of Texas to the East Coast, and from the state of Tennessee to the Gulf Coast," said McCullough.

He noted that this event "marks the beginning of a long-lasting relationship between DAU and local customers in the Southern region.

"We are here to support programs as the need for assistance occurs," said McCullough, "not

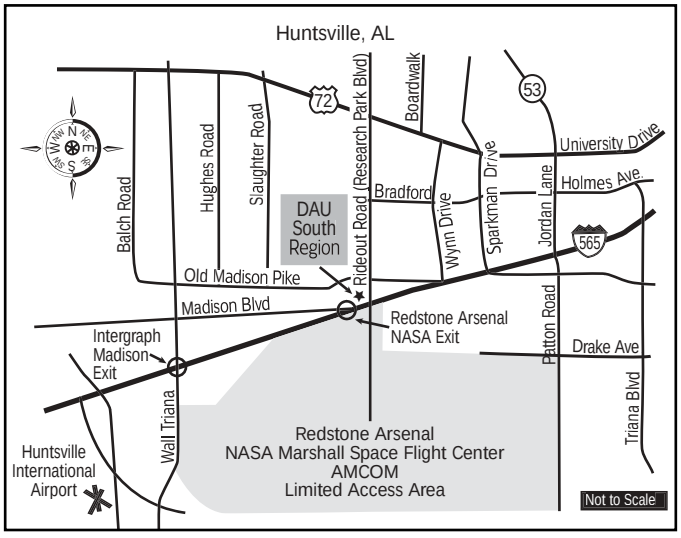
Opening remarks by James McCullough, Dean, DAU South Region, Huntsville Ala.

Official ribbon-cutting for the opening of DAU South Region, Huntsville, Ala., Feb. 21, 2002. From left: Barbara Mroczkowski, Assistant Commandant, Army Logistics Management College, Fort Lee, Va.; James McCullough, Dean, DAU South Region, Huntsville, Ala.; and DAU Commandant, Army Col. (P) James Moran, Fort Belvoir, Va.

Photos by Army Sgt. Kevin Moses

Gasiorek-Nelson is a full-time contract editor for Program Manager Magazine, Defense Acquisition University Press, Fort Belvoir, Va. She is employed by SRA International, Inc., Arlington, Va.

to teach a class five years from now on what they did wrong." This, he said, is the framework that the faculty and staff of the DAU South Region are devoted to putting forward throughout the community.



Keynote Speaker

McCullough introduced and welcomed the keynote speaker, U.S. Army Col. (P) James Moran, DAU Commandant, who has enjoyed a long association with Huntsville throughout his career in program management.

"This is a great day, a great opportunity for the Huntsville community, DAU, the Army, and the many other tenants who are here in Huntsville," Moran said.

"There are about 10,000 people in this region who are part of the acquisition, technology, and logistics workforce that DAU is responsible for training. Our mission is to be the corporate university for that workforce. We don't teach people engineering, but we teach them how the military would like to handle engineering problems," he said.

Keynote speaker, Army Col. (P) James Moran, DAU Commandant, Fort Belvoir, Va.

Moran also told the participants that DAU is planning on having 70 people working in the South Region—50 of those 70, he confirmed, are already on hand.

The faculty and staff of the new DAU South campus, Moran stated, are all acquisition professionals, government workers, and military personnel, who will be responsible for providing the training that is required at Defense Acquisition Workforce Improvement Act (DAWIA) Levels I, II, and III, as well as all related functional areas.

DAU South Region campus, he noted, will be responsible for about 30,000 of the 130,000 people who represent the DoD Acquisition, Technology and Logistics workforce.

Concluding his remarks Moran said, "We're happy to be here in Huntsville. It is a large mission, and I believe it's going to be a great team effort with the Huntsville community, DoD, and the Army. Thank you all for coming, and we're looking forward to serving the workforce in the DAU South Region."

Partnership with Army Logistics Management College

Guest speaker, Barbara Mroczkowski, Assistant Commandant of the Army Logistics Management College (ALMC), Fort Lee, Va., spoke on the continuing partnership between ALMC and DAU—a partnership that began in 1993, when ALMC became a Consortium School teaching DAU courses. In 2000, ALMC became the host for the DAU campus at Fort Lee. "Today we are here reversing roles and we [ALMC] are becoming the organization that is being hosted by DAU," she said.

"This is really an exciting time for us at ALMC because we have an opportunity to move our introductory courses here to the DAU South Region campus and provide additional support to the Huntsville community.

DAU South Region
Huntsville, Ala.

South Region

James L. "Jim" McCullough II was named Dean, DAU South Region, Huntsville, Ala., effective Oct. 22, 2001. McCullough has held a variety of acquisition leadership positions in both government and industry, spanning a 32-year career. He comes to DAU from E-OIR Measurements, Inc., where he served as President and Chief Operating Officer since July 1999. He was also a senior consultant at E-OIR, supporting major customer programs for sensor science, systems acquisition, systems integration and advanced learning studies. Prior to joining E-OIR, he held key positions at Nichols Research Corporation from 1990 to 1999, including Corporate Vice President and Director for Corporate Horizontal Integration of Command, Control, Communications, Computers and Intelligence (C4I); Director for the Joint Test and Evaluation program; and Business Unit leader for Defense Systems Integration. In 1990, McCullough retired from the U.S. Army where he held various infantry field assignments as well as program management positions that directly contributed to the development of advanced technology. He holds an Engineering degree from the U.S. Military Academy and a master's in Procurement from Florida Institute of Technology.

"Thank you for welcoming us here today. We're looking forward to working with your organization and supporting the Huntsville workforce," Mroczkowski concluded.

About the New Campus

The South Region campus will ultimately consist of 70 staff and faculty members, who will focus on teaching, research, and performance support (targeted training, consulting, and partnering with agencies). Their agenda also includes working with local offices and staying current on major issues and needs of the acquisition workforce throughout that region.

The new Huntsville facility will offer many reengineered courses in contract management, logistics, and the new six-week Program Management Office Course (PMT-352), which replaces the former 14-week Advanced Program Management Course (PMT-302) as the Level III PM Certification Course.

Besides six weeks of classroom training, the new Program Management Office Course, or PMOC, begins with 50 hours of Web-based distance learning that students complete over a 60-day period.

DAU South will also provide a diversity of business and technical courses, including Systems Engineering and Production courses available to military and civilian personnel within the Department of Defense. In addition, the DAU South Region campus will also host ALMC's introductory acquisition courses, and in the next six months the ALMC Materiel Acquisition Manager Course (MAM) will be relocated to Huntsville. Simultaneously, eight faculty members will be relocated to the new DAU facility.

The DAU South Region campus is conveniently located outside the Redstone Arsenal (Main Gate No. 9), at 6767 Old Madison Pike, Bldg No. 7, providing easy access and security. This is a new, first-class facility that is fully prepared to accommodate student needs.

The new, one-story brick building, with large windows (providing ample sunlight), contains 22,500 square feet. It also contains three permanent classrooms, furnished with state-of-the-art equipment and furniture to enhance the students' learning experience.

The current 22,500 square feet of the new facility will be fully filled out by early March; future plans call for expansion of another 7,000 square feet by the end of the summer. DAU South is also planning on partnering with the University of Alabama at Huntsville, the Florida Institute of Technology, and other local higher-education institutions supporting DoD.

The new location offers a Learning Resource Center, fitness center, excellent parking, as well as convenient access to a quality shopping center, restaurants, and hotel accommodations.

Region Opening a Team Effort

As the workforce population shifts and requirements for acquisition professionals to provide better, cheaper, and faster services increase, being knowl-

Huntsville Area Attractions

Huntsville is commonly referred to as the space capital of the world—home of the U.S. AMCOM and Marshall Space Flight Center. The city also offers numerous attractions such as the U.S. Space Rocket Center, The Von Braun Planetarium and Observatory, Old Town Historic District, Harrison Brothers Hardware Store (the oldest hardware store in Alabama), and the Alabama Center for Military History.

The Huntsville region offers an excellent climate; a variety of recreational activities such as fishing, country hunting, and hiking; as well as other local attractions, including the North Alabama Railroad Museum, Limestone Zoological Park, Looney's Tavern, Jack Daniel's Distillery, Alabama Caves, and Wheeler Plantation.

edgeable in different functional areas becomes ever more vital. To meet the challenge of a constantly changing and evolving acquisition workforce, DAU is extending its classroom capabilities through the establishment of regional campuses nationwide. The University is stepping forward and taking full advantage of new technology to provide continuing education and distance learning that meets the immediate needs of the acquisition professionals where they need it most—in the workplace.

The opening of the DAU Huntsville campus is a major element in the DAU transformation process to place staff and faculty closer to major concentrations of the acquisition workforce. The transformation and reorganization of the University focuses on having five regions:

- DAU Capital and Northeast Region, Fort Belvoir, Va.
- DAU Midwest Region, Wright-Patterson Air Force Base, Ohio
- DAU South Region, Huntsville, Ala.
- DAU Mid-Atlantic Region, Patuxent River NAS, Md. (opening in April 2002)
- DAU West Region, San Diego, Calif. (later in 2002).

"This is a dramatic step for transformation of the DoD acquisition workforce," McCullough concluded. "It is the culmination of efforts to reengineer our courses and prepare for an expected influx of over 50 percent of the workforce over the next five years. DAU South Region will be on the leading edge of that transformation."

Editor's Note: For more information about DAU, course descriptions, or how to register for DAU courses, visit the DAU Web site at *http://www.dau.mil.* More information about Huntsville and Area Attractions is available on the Huntsville Home Page at *http://www.ci.huntsville.al.us.3*

NOTICE

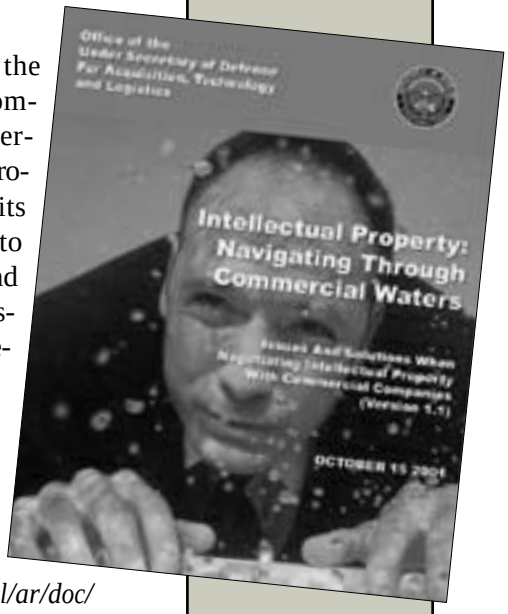
The PEO/SYSCOM Commanders' Conference presentations are no longer linked to the Defense Systems Affordability Council (DSAC) Web site. Presentations from the Oct. 23-25, 2001, conference can now be downloaded from the Director, Acquisition Initiatives Web site at *http://www.acq.osd.mil/ar/peconf2001.htm.*

Intellectual Property: Navigating Through Commercial Waters

Issues and Solutions When Negotiating Intellectual Property With Commercial Companies

Published by:
Office of the Under Secretary of Defense (Acquisition, Technology and Logistics), Oct. 15, 2001, Version 1.1

The concept of Intellectual Property (IP) is fundamental to a capitalist society. A company's interest in protecting its IP from uncompensated exploitation is as important as a farmer's interest in protecting his or her seed corn. Often companies will not consider jeopardizing their vested IP to comply with the government contract clauses that have remained in use since the days when DoD was the technology leader and frequent funder of research programs. We must now create a new environment for negotiating IP terms and conditions that protect the true interest of the government—incorporating technologically advanced solutions into the weapons systems and management systems we deploy.



This guide was created for the government acquisition community (i.e., contracting personnel, legal counsel, and program managers) and its industry partners as a tool to equip them with new ideas and solutions to address the IP issues that divide us in the negotiation process.

Currently published online, the guide may be downloaded from the Director, Acquisition Initiatives Web site at *http://www.acq.osd.mil/ar/doc/intelprop.pdf.*

Implications of Commercial Product Insertion into the National Defense

"The Rest of the Story"

TOM CASTINO

Paul Harvey is a something of a legend in radio newscasting. First he reads you the headlines from today's newspapers, and then he gives you, "the rest of the story." This is usually a follow-up to a recent headline, or even from some historical event. The rest of the story provides insight gained from an after-the-fact perspective, or *implications* of how the story may have affected other events, people, or places. So, as the respected Mr. Harvey would say, "What's the rest of the story in commercial product insertion into the U.S. military?"

Before we examine individual aspects of "the rest of the story," let's first get an understanding of what the Commercial Off-the-Shelf' (COTS) story is all about. What does it mean to the DoD—to the industrial base and to the testing and evaluation sector?

A Decade of Migration Toward COTS

Over the past decade, our nation's military has been moving toward commercial products and practices whenever possible. More specifically, this means that the DoD is migrating:

- *toward* a Just-in-Time inventory instead of a Just-in-Case stockpile approach to inventory; and
- *toward* international standards like those set by the International Orga-

Castino is Vice Chairman of the Corporation and a Member of the Board of Trustees, Underwriters Laboratories Inc. (UL), Northbrook, Ill. UL is an independent, not-for-profit product safety testing and certification organization, which has tested products for public safety for more than a century. Each year, more than 17 billion UL Marks are applied to products worldwide.

nization for Standardization, or ISO—and away from military-unique inspection processes.

Moreover, as this migration has gained more momentum over the years, the value of product testing and safety has become even more important.

For more than a century, Underwriters Laboratories Inc. (UL) has served as a key architect of the U.S. product safety system, while providing unparalleled U.S. market acceptance. UL is working for a safer world through its unwavering commitment to public safety, absolute integrity, and independence.

For these reasons and because of a shared mission of safety, the Federal Government has relied on UL for the past 25 years to help streamline its standards development and acquisition processes.

Back in the 1970s, DoD realized that it could reduce costs significantly by buying COTS products—the non-combat variety. Prior to this time, the DoD had contracted out to select vendors, manufacturing products to their own standards—either MilSpecs [Military Specifications] or FedSpecs [Federal Specifications]. This can be a costly process. A coffee maker customized to MilSpec manufacturing standards is much more expensive than buying the familiar off-the-shelf variety. And the coffee tastes the same.

After DoD started to buy more and more products off the shelf, it made even more sense to review MilSpec standards relative to the content of UL Standards. It simply made good business sense considering the fact that the products of most American manufacturers complied with UL Standards of Safety.

Over the past two decades, the DoD has adopted 164 of more than 775 UL Standards. These can be broken down into five product category standards, representing some of the most widely used commercial products utilized by the National Defense (Figure 1).

Most of these products bear the UL Mark of Safety, as they are released direct from a manufacturer or to a government warehouse, awaiting distribution to any number of military locations and applications.

FIGURE 1. Product Category Standards

Category	Representative Samples	Approximate Coverage (%)
Electrical Construction Materials	flexible metal conduit; enclosures; wire and cable; fuses; wire connectors; circuit breakers	40%
Construction materials, industrial HVAC equipment; tanks and accessories	fire doors; steel inside tanks; refrigerating units; fire dampers; air filter units	22%
Appliances; tools; test and measuring equipment; information technology equipment	portable electric tools; heating pads; microwave ovens; coffee makers; information technology equipment; measuring and testing equipment	21%
Fire protection/suppression; burglary protection and signaling equipment	fire extinguishers; hydrants; holdup alarm units and systems; burglary-resistant safes	9%
Test method and component	plastics; printed wiring boards; tests for flame propagation of fabrics and films; tests for fire resistance of roof covering materials.	8%

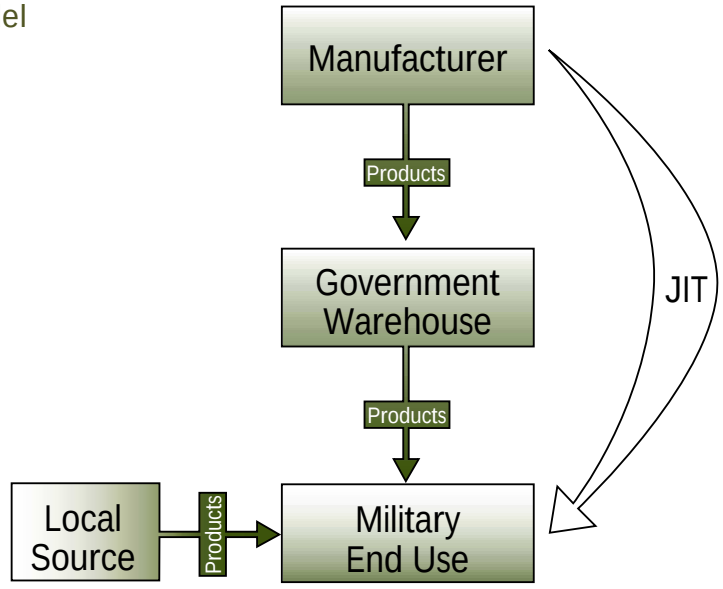
Safety and COTS

But in terms of military applications, how does safety play a role in COTS?

UL and the U.S. Government…A Shared Mission

The National Defense, and to a greater extent the U.S. Government, share a mission of safety with UL. The military's concern for safety is not unlike UL's mission of promoting public safety and environmental protection. However, to successfully support the mission of national defense, the safety of military personnel and their families should be of

FIGURE 2. Manufacturing Process to End-Use Distribution Model



utmost importance. One example would be product safety. From a broader safety viewpoint, it's just as important for a missile launcher as it is for a toaster oven. This could be an actual product or a component—for example, electrical wiring, or insulation—which comprise almost half of the UL Standards adopted by the government. If we can't be confident that everyday products meet minimum safety requirements, it's difficult to be confident in more sophisticated technologies and applications.

The U.S. Government and UL both share a mission of public safety, and exciting opportunities to work together are becoming ever more apparent.

Safety and the Nation's Aging Wire Infrastructure

For example, the National Transportation and Safety Board (NTSB) concluded that a TWA crash was the result of a short circuit spark near a fuel tank—due to an older, deteriorating electrical wiring system. The NTSB recommended further research into new technology that could prevent the sparking. This new technology is in the form of Arc-Fault Circuit Interrupters (AFCIs).

Also last year, the President's Advisor from the Office of Science and Technology Policy stated that "a coordinated government-industry partnership is required to resolve the hazard of aging wire systems…." And this not only applies to aircraft, but to nuclear power plants and NASA equipment as well.

UL was recently asked to participate in an important study, along with other experts from the military, Consumer Product Safety Commission, Department of Energy, and the National Transportation Safety Board.

The panel was mainly concerned with two problems:

- How to test an aging wire infrastructure for potential problems.
- How to better protect the wire itself through the application of new technologies such as AFCIs.

For both of these problems, UL offered its electrical research and testing expertise, which had already spearheaded and developed the safety standards for AFCIs. This is a prime example of how UL and DoD could work together in the future—which brings us to our first *general* implication.

Opportunities for UL and DoD to work together throughout the entire acquisition cycle are growing—from developing standards, to enhancing the manufacturing and pre-shipment processes, to specialized testing on commercial products for military applications.

Safety Adds Value

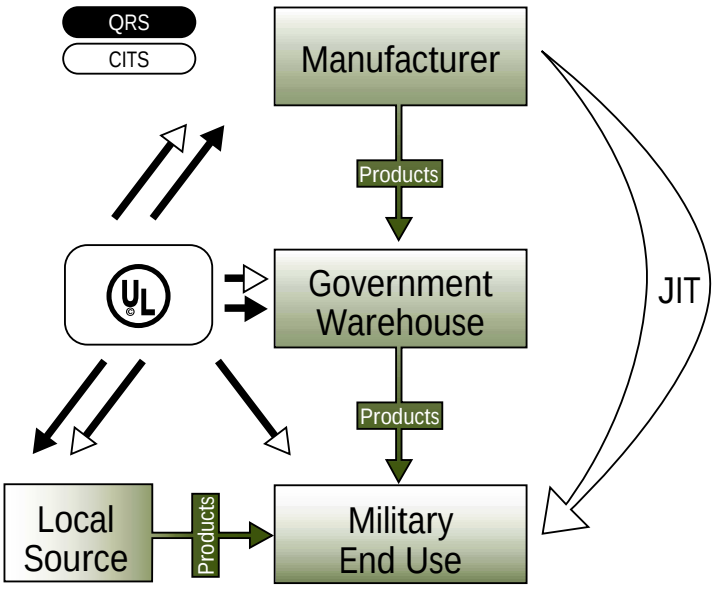
Another *general* implication is that safety adds value to the product. Studies have shown that over 60 percent of the consumer public would not buy an electrical product without a safety mark. This generally refers to the UL Mark, with 17 billion released in 2000 alone.

Consumers today are better informed than ever. They understand that when products are brought into their own homes, safety cannot be taken for granted. The real issue is the *cost* of product testing, which can decrease the bot-

FIGURE 3. Quality Registration Systems

- ISO 9000: An overall quality management system standard — industry-wide
- QS-9000: A standard specific to the automotive industry
- TE Supplement: A standard for suppliers to the automotive industry
- ISO 14001: An international standard for environmental management systems
- AS 9000: A standard specific to the aerospace industry
- VDA 6.1: A standard required by German automobile manufacturers
- TickIT: A standard specific to the information industry

FIGURE 4. Distribution Model



tom line and therefore be vulnerable to criticism.

Does Safety Add Value to a Product?

That's been a question posed to the testing and evaluation community by both the military and industrial sectors over the years. And here's another question to consider, "What value do you put on human safety?" What liability risks and loss of property are you willing to assume? In other words, what price are you willing to pay when safety is not a demand driver?"

When those questions and the associated answers are considered, testing and evaluation can be viewed as an investment, aimed at improving the products used by military personnel. What's more, the National Defense Program Managers who buy off-the-shelf are the same consumers who bring UL Listed products into their own homes. When viewed from that perspective, each one of us is a consumer!

So far in this analysis, two general or overarching implications have emerged:

- Opportunities to work together.
- Safety adds value.

But emphasis needs to be placed on more *specific* implications, so let's take a closer look at where we've been, where we are—and where we might be heading with commercial product insertion into National Defense systems.

"COTS Means Business!"

That is what could have been ripped from the headlines had Paul Harvey reported this story. The most positive and immediate implication was the tremendous business opportunity for all of us—both public and private sectors. The military has been reducing costs and the manufacturer has been increasing revenues. But the more specific implication for the testing and evaluation sector is that voluntary standards decrease redundancy and duplication of efforts.

The sheer *scope* of commercial product insertion can be seen through a few examples: off-the-shelf electrical components are finding their way into nuclear submarines, missiles, and aircraft.

On the other hand, an equally functional $75 dollar off-the-shelf model has replaced a $400 MilSpec power drill from a decade ago.

So what's the more specific implication here? *If you buy a product off-the-shelf, it can meet all military applications.*

The Rest of the Story!

But as Mr. Harvey would say, "Here's the rest of the story."

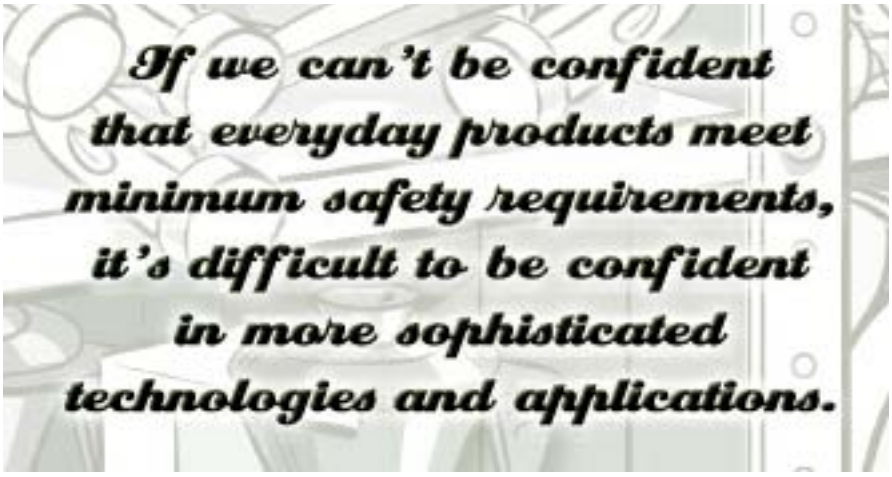
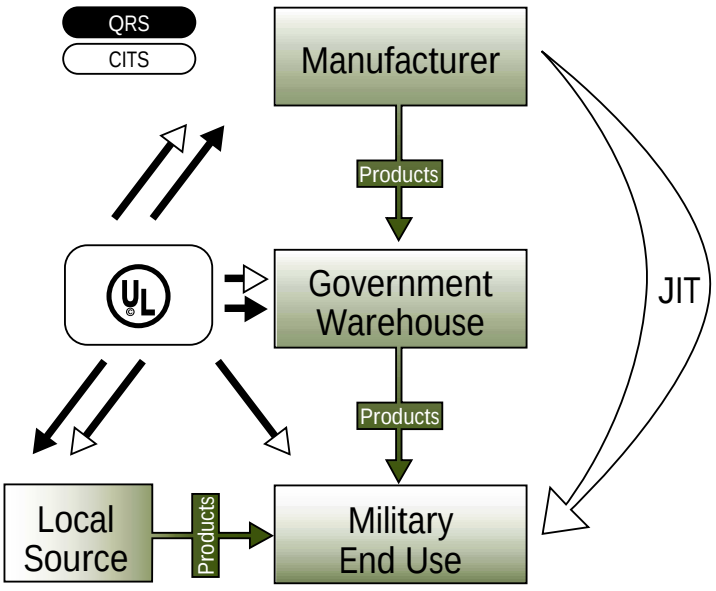


FIGURE 5. Representative Pre-Shipment Specifications

- Color verification
- External finish quality
- Lot quantity
- Thickness, volume, and weight
- Label markings
- Model numbers
- Packaging
- Shipping addresses
- Bar code verification
- Performance tests
- Accessory characteristics
- Indoor/outdoor temperature
- Humidity resistance
- Dust protection
- Special end-use conditions

FIGURE 6. Two Ways of Validating Product Before Shipment



Now for many products a one-size-fits-all implication holds up—but in most cases, one size does *not* fit all. A very comprehensive study last year by the Office of the Secretary of Defense entitled, "Commercial Item Acquisition: Considerations and Lessons Learned," predicted that a gap will exist between DoD and commercial use—and the gap may be large.

Customization

In all cases, program offices and contractors alike discovered that the commercial items lacked essential capabilities, requiring extensive customization. This resulted in cost and schedule overruns that could have been avoided, if only the contractors and stakeholders had held open communications before production.

However, some customization will always be expected, considering the scope and breadth of military applications. For instance, DoD buys a lot of trucks. What's more, the military classifies trucks as a commercial product. Yet, some of those trucks are used in military-unique applications and subject to customization. An example would be a longer exhaust pipe installed on certain trucks driving through rivers.

So the more realistic implication is that one size does not fit all, because some form of military-unique requirement will always be embedded within the COTS program. This implication should lead us to a solution that could reduce or—at best—facilitate those special needs cost effectively. Included in this solution are standards development *prior* to the manufacturing process; and inspection, testing, and auditing during and *after* the manufacturing process.

Standards Development

Let's look at the very first step in the procurement cycle, i.e., standards development.

UL is very excited about its new, enhanced standards development process. The Standards Technical Panel (STP) is comprised of balanced participation from diverse groups. Consumer advocates, manufacturers, AHJs (Authorities Having Jurisdiction), engineers, and military government representatives—all will have an equal voice in the process from the very start of the standards development and revision processes. In this way, DoD's interests will be represented *before* the product is ever produced.

This holds great promise for strengthening the COTS program—by providing more commercial items that the military could directly insert into the National Defense system. In fact, UL is asking DoD to help identify new candidates who may be future panel members. In terms of open communications to reduce the gap between off-the-shelf products and customization, UL's new STP process is an initiative with great potential whose time has come.

Does One Size Fit All?

Another COTS assumption is that targeting "basically generic" products can achieve a one-size-fits-all goal. But just the opposite has been the case. Just consider the problem faced by manufacturers of electrical sleeves that are used for insulation. If they wanted to participate in the COTS program, they had to manufacture a special electrical sleeve to a MilSpec. This meant producing two different lines: one for commercial use and one for the military. And of course, maintaining two different inventories can only increase overhead costs.

The solution? Elevate the manufacturer's base requirements to the higher military specifications and *produce just one sleeve*. The end result raised the quality standards for the consumer sector—a win-win scenario.

Another implication is that if the DoD is buying more commercial products, they need to embrace commercial "best practices" in the distribution system—from the plant or warehouse to the actual end user. In fact, the military has been forced to make major distribution changes, because inventory control has become a serious issue.

A Report to the Congressional Committees by the General Accounting Office (GAO) last November stated, "…The lack of adequate controls over inventory shipments could substantially increase the risk that millions of dollars will be spent unnecessarily. For example, GAO records indicate that the Army could not account for about $900 million dollars in shipped inventory for 1998…."

Retired Army Gen. Henry "Hugh" Shelton, former Chairman of the Joint Chiefs of Staff, reported, "…The military is looking for ways to improve its distrib-

FIGURE 7. Site-Specific Specialized Testing

PURPOSE OF TEST	SITE-SPECIFIC CONSIDERATIONS
Investigative	Does a certain plastic give off toxic fumes under high temperatures? Or when subjected to fire, does it give off toxic smoke that would impair visibility and be harmful?
Functionality	Will a power tool operate under "Desert Storm" conditions with sand and heat factors? Or under jungle conditions with high humidity and temperatures.
Reliability	Will a certain product perform reliably?
High Technology	Are signal disruptions present in the form of electromagnetic interference or lasers?

ution systems…." This would support the migration to commercial "best practices" such as ISO and Just-in-Time models. But to facilitate this kind of quick and nimble distribution system, certain quality assurance programs must also be in place to ensure *accuracy—accuracy* in the integrity of the product itself, *accuracy* in the shipment ordered, and *accuracy* in military-specific end-use applications.

Best Commercial Practices—UL's Adjunct Services

UL's adjunct programs such as: Quality Registration Systems, the ISO 9000 series Commercial Inspection and Testing Services, and Specialized Testing are designed to enhance DoD's distribution system, as it evolves to a "best commercial practices" model. The military's current "Manufacturing Process to End-Use Distribution Model" is depicted in Figure 2 (p. 24).

Quality Registration Systems

UL assesses and registers organizations whose quality systems conform to international standards such as the ISO 9000.

While many are familiar with ISO 9000, its relationship to COTS is not always clearly understood. In fact, discussion within the military procurement community has focused on whether ISO 9000 should be an allowable expense on a DoD contract. This is a valid concern. Consider, however, that to have an effective program, ISO 9000 must be directly tied to specific procurement processes and procedures. And in terms of military procurement, that covers everything from when the purchase orders are issued, to contracts being issued, to the whole manufacturing process, to documentation of shipping and distribution. In other words, ISO provides the framework—and for it to be cost effective, the military needs to specify requirements within the framework, i.e., the more exacting the specs, the more effective the ISO standards. In this way, ISO can provide a higher level of confidence that the National Defense will receive a consistently high-quality product, packaged and shipped in a consistent manner.

The key benefits to the manufacturer are: higher levels of international market acceptance and fewer product returns. *The key benefits to the military are*: gaining more control over inventory systems through ISO quality assurance, which can be translated into a tremendous cost savings. This military benefit has to be leveraged against the newer Just-in-Time inventory system, which has reduced the number of government warehouses and the associated cost burdens.

The specific implication here is that, once warehouses have been eliminated, the military will need even higher levels of confidence from its suppliers. A Just-in-Time delivery system leaves little margin for error. In this scenario, quality registration systems would provide the extra measure of confidence. Some of the applicable registrations are shown in Figure 3, p. 24.

By overlaying a Quality Registration System (QRS) on the Distribution Model (Figure 4, p. 25), a higher level of accuracy can be achieved through more stringent requirements and processes.

Commercial Inspection and Testing Services

Whereas, QRS validates the management system, UL's Commercial Inspection and Testing Services (CITS) can validate and verify the actual order or "lot" *before* shipment. Consider the current situation.

Procurement is worldwide, and recently the DoD has relied on local sourcing whenever and wherever possible. So the need for pre-shipment inspection is becoming increasingly more important.

Many buyers require source inspections (factory assessments, pre-shipment inspections, etc.) because they are either unsure that the supplier or source will indeed ship the product that has been specified, or the complexities and associated risks demand it. Examples of pre-shipment specifications that could be verified are shown in Figure 5, p. 25.

Since suppliers can ship products that are not in compliance with the buyer's specifications, due to unintentional errors, quality problems, or simple miscommunications, the need for inspection and testing services exists. And UL's service program can check that products made at the manufacturing source (or port of entry) meet delivery specifications and requirements.

In many cases, the military may have a higher specification that falls outside of conventional usage, therefore requiring additional testing. By using UL's testing expertise with over 18,000 products, field representatives in 90 locations

worldwide could perform or witness whatever tests were specified at the point of manufacture. This would eliminate the need for sending military inspectors all over the world to perform the same activities. UL has Field Representatives *on the ground* who could evaluate both the quality and accurate delivery of goods. And this is *before* the military would actually take ownership of the products.

So in brief—here's "the rest of the story" in validating product before shipment.

Essentially, there are two ways to accommodate such validation (Figure 6, p. 26). The dark arrows in Figure 6 represent QRS, which validates the system to ensure consistency of quality. The clear-tipped arrows represent CITS, which validates consistency through preshipment inspection and testing. Together, UL's Quality Registration System and Commercial Inspection and Testing Services could help improve the National Defense inventory control system.

Specialized Testing "…where site needs must prevail…"

UL tests many products that are purchased off-the-shelf by the DoD for everyday use. In many instances, the UL Mark is the only indicator needed to show that the product meets safety requirements. While these products would not meet certain rigorous military specifications, they are certainly appropriate for everyday military use—if used in a "consumer-like" environment. For example, coffee makers and air-conditioners at Fort Bragg's office facilities.

But other products and devices intended for everyday use—such as small household appliances—also may be used in military environments. Under such conditions, products are expected to perform under more rigorous usage, i.e., temperature/humidity extremes, dust and dirt, acidic/caustic fumes, hazardous and flammable gases, and the like.

In those instances, UL can perform site-specific specialized testing on products targeted for extreme conditions, as categorized in Figure 7 (preceding page).

Figure 8 below represents an idealized, Full-Complement-of-Services Distribution Model, with UL's Specialized Testing.

UL and High-Technology Testing

Of particular interest to the DoD, are UL's Electromagnetic Compatibility Testing (EMC) and laser testing—two areas of increasing military concern as emerging threats.

In addition, UL has five EMC laboratories in the United States and various locations worldwide that can conduct tests and issue an international EMC Mark.

UL's laser testing program is designed to provide very specific testing needs. Manufacturers, government agencies, and others may request that a third party provide this kind of measurement data. UL can perform and report whatever test data is required in this capacity.

For additional information, *http://www.ul.com* is a comprehensive resource for any of the adjunct services referenced in this article.

Stay Tuned

Commercial product insertion has positively impacted the military, the industrial base, and the testing and evaluation sectors—although it is not the one-size-fits-all approach that many had hoped.

Overall, there appear to be two "big picture" or overarching implications emerging: 1) opportunities to work together throughout the acquisition cycle abound; and 2) safety adds significant value.

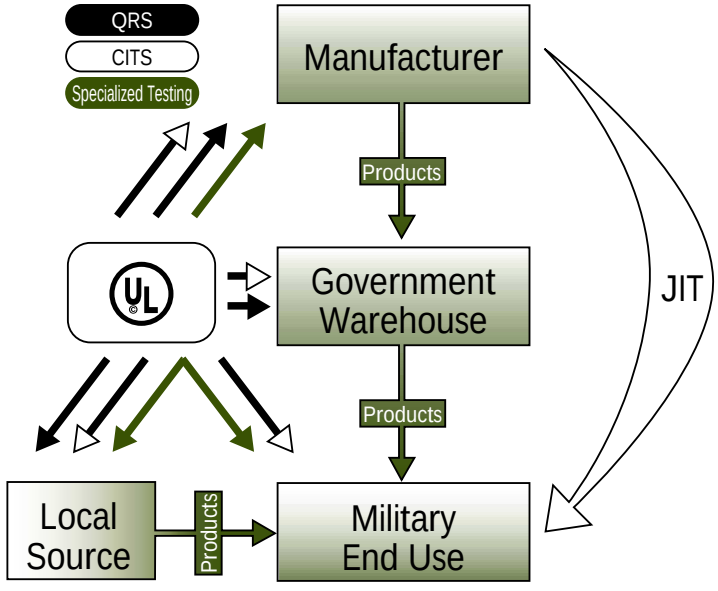
In looking at the "rest of the story," the following more specific implications were discovered:

- The military is reducing costs.
- The manufacturers are increasing revenues.
- One size off-the-shelf does not fit all.
- The distribution channel is migrating toward a commercial "best practices' model.

Most importantly, however, it was also discovered that UL and the National Defense community are truly working *together* for a safer world. So what's the "rest of the story" in the years to come? Stay tuned. And as Paul Harvey would sign off, "Good Day!"

Editor's Note: Castino welcomes questions or comments on this article. Contact him at *tom.castino.ul.com.*

FIGURE 8. Full-Complement-of-Services Distribution Model



The acquisition ladder is a tough climb without the right education…DAU.

When was the last time you or one of your associates attended one of the 85 different acquisition courses offered by the Defense Acquisition University at one of its 12 locations around the country?

Did you know tuition is free to qualifying industry personnel?

Are you current on the DoD 5000-series changes? Do you know the latest acronyms and terms?

When was the last time you or your associates took an introductory, intermediate, or advanced course in acquisition?

Did you know that DAU now offers 10 online courses? And that seven more of its courses are a combination of Distance Learning and Resident training?

We also offer fee-for-service consulting and research programs. And take advantage of our competitively priced conference facilities.

Maybe it's time to talk to your training officer about some more education. Or call the DAU Registrar at 1-888-284-4906 to see how we can structure an educational program just for you.

Visit the DAU Web site for the DAU 2002 Catalog and other publications at *http://www.dau.mil* or sign up to attend online courses at DAU's Virtual Campus: *https://dau1.fedworld.gov/dau/index.htm*.

Dr. Program Manager—Rx Program

Real Symptoms or Transitory Discomfort?

DANIEL KNAPP

Program Managers—as do medical doctors—see symptoms of problems every day. And as with medical doctors, "Dr. Program Manager" must understand symptoms and take quick action before the disease threatens the patient. Medical doctors seldom encounter new diseases; neither do Program Managers.

You just learned from your prime contractor that it cannot furnish data from one of its subcontractors—data you both needed and expected to leverage as reusable information. The contractor's prognosis: bad news for schedule and cost. Further, your prime contractor's Program Manager paints a dark picture about the company's ability to meet schedule while looking for alternate data sources.

How did this happen? It came straight out of the blue—right? Not likely.

Early Warnings

Acquisition programs develop maladies that interfere with their happy and healthy lives. As with living creatures, acquisition programs exhibit early symptoms of their sickness that Dr. Program Manager may observe and treat before these symptoms evolve into life-threatening diseases.

Knapp is a Life Cycle Project Director for the U.S. Army Simulation, Training and Instrumentation Command (STRICOM) in Orlando, Fla.

This article will explore eight symptoms of acquisition program ills and prescribe treatments that you, the Program Manager, might administer. Far from a negative view of the business of acquisition program management, this article proposes the predictability of program illnesses and shows that their treatments come from

medication already resident in the Program Manager's toolbox.

Programs from birth to death display predictable symptoms from which we foretell future sickness. For the Program Manager, as with the medical doctor, our jobs focus on the 5 percent of the program that does *not* go right. The good news: as with doctors, we seldom see *new* sicknesses.

Frequently Encountered Acquisition Program Illnesses

People and programs display predictability. We know what to do when we see the symptoms. However, the essential question is twofold: which symptoms will emerge and in what order will they appear?

1

Weakness in Proposal Follow-through

In your Request for Proposal (RFP) and the ensuing proposal, you probably anticipated reuse of certain software and data from preceding programs. This reuse reduced your program risk, cost, and schedule estimates. After contract award, you may find that the government did not purchase reuse rights to the anticipated software and data. The first symptom of this sickness will come, as described in the opening vignette, when the contractor asks for government assistance in obtaining data that it planned to acquire on its own.

At first examination, you expect the contractor to do what he or she needs to do to obtain the software or data. On further examination, you realize the contractor bid (at government urging) with full expectation of data or software reuse.

Cure: Nothing comes easy or free. Look into an Associate Contractor Agreement (ACA) between the contractor owning software or data rights and the contractor needing the software or data. The sooner you put the ACA in place, the sooner data will flow. An ACA will facilitate later data requirements as well as current requirements.

2

Rash of Attacks Upon Your Program Funding

True enough, all programs experience close funding scrutiny. Solid Program Manager effort can protect your funding under normal conditions. Once you project a schedule slip or cost overrun, you exit normal conditions.

In the Defense Systems Management College's Program Management Course, we learned that no program had ever recovered once it deviated 15 percent from its Cost/Schedule Status Report (C/SSR) Baseline. Regardless of the contractor's good intentions and verbiage, you will probably suffer the same fate.

Good program metrics such as C/SSR, coupled with careful schedule monitoring, can pinpoint program slips and cost overruns. The only question is, when will you begin to take action?

This rash can quickly turn into a cancer. As with a cancer, the first inclination is to deny; the second to assume it will cure itself. After we exit the third stage—anger—we begin to share the information with others who need to know. Only then can we enter the fourth stage—dealing with the problem.

3

Loss of a Key Body Part

Your team consists of solid performers. Some of these solid performers will leave the program, usually at the worst possible time. Don Shula, in *Everyone's a Coach*, discusses his experience with the Baltimore Colts when the starting and backup quarterbacks went down. During the playoffs, he had to go with his starting halfback as quarterback. In other words, he adapted to what the halfback *could* do—not what he *would* have done with a real quarterback. Likewise, anticipate the loss of key team members in your program and how you will fill the positions. Build your contingency plan by using a replacement's strengths and adjusting the roles of other team members to fill the void.

While you may not lose your most vital team member—if such a person exists—you must plan on losing one or more team members. Plan for it—and deal with it. Your first action, however, is to instill in newcomers the overall *program* vision, and in the process, help them discover and achieve their own *personal* vision.

4

Fattening of the User Requirements

User representatives will want to expand your program requirements. That's a given. Also a given—they will *not* bring funding to pay for the expanded requirements. The first and most visible symptom of this sickness is triggered by the replacement of a key user representative. New players will want to adjust the requirement. In the second, though less visible symptom, users dwell on ini-

Dr. Program Manager will find the program loaded with symptoms. As with the medical counterpart, Dr. Program Manager must determine which symptoms are real and which amount to only a transitory discomfort.

Read About the Latest in Technology Developments

Visit the Online Virtual Technology Expo

https://vte.dtic.mil

Studies over the past 10 years have highlighted the difficulties in transferring technology from research laboratories to development organizations. In 1999, the Deputy Under Secretary of Defense (Science and Technology) sponsored the development of an automated tool to facilitate technology transition. The Virtual Technology Expo (VTE) went into production in October 2000. Designed to advise the Requirements and Acquisition communities of new technology developments, the VTE contains descriptions of technology advancements and points of contact for obtaining more detailed information.

The technology database is provided as a restricted service through the World Wide Web *(https://vte.dtic.mil*). While the database is currently available, upon registration, only to U.S. government employees and their contractors, an enhancement will soon be completed to protect several levels of information sensitivity. At that time, access will be expanded to include industry, academia, and international technology partners.

VTE users may locate information by selecting Defense Technology Areas or Joint Warfighting Capabilities; by searching the text of technology descriptions for specific criteria; or by finding the organization or point of contact for research projects. Likewise, they may submit technology project descriptions along with multimedia documents, presentations, pictures, diagrams, and videos.

Communication is key! With the participation of the Science and Technology, Requirements, and Acquisition communities, the VTE can expand its database of information to include many sources of technology research. This consolidated database should enable users to:

- Plan for future technology upgrades.
- Monitor commercial technology and product development.
- Find technologies that may enhance military capabilities.
- Choose which technologies to leverage and which to develop with their own resources.
- Develop and refine requirements.
- Prepare analysis of alternatives assessments.
- Showcase research efforts to a wider audience.

For additional information, send an email to *vte_help@dtic.mil*.

tial needs traded out when you planned the program baseline in light of financial reality. Users will immediately campaign to revisit the deleted needs to any sympathetic audience. Watch for user attempts to include these previously deleted system needs into the Initial Operational Test and Evaluation test criteria.

One approach to mitigating the user-fattening acquisition program requirements: simply ask user representatives what must transpire to satisfy the requirements spelled out in the general need statement. Sometimes the answer is stunningly simple. Their words may not convey the same idea to them as to you.

One user's representative complained loud and long that the program wasn't willing to provide needed logistics support to a system we were fielding. He registered this complaint in spite of millions of dollars of support materials. When asked what he thought he needed that he wasn't getting, the answer was that he needed a circuit logic tester.

Logic tester was added—user representative beamed. Life should always be so tough.

5

Transition to a Specialist

Regardless of how the acquisition contract has proceeded, transition from the known development contractor to life cycle support raises trauma. No one else can support like "our contractor" (yes, this same contractor who was late on delivery, exceeded the budget, and had to receive waivers for two key technical capabilities).

Symptoms of hardening of the transition include the plan for additional post-delivery development or pre-planned program improvements initiated as a block development for delivery after system acceptance. Planning for life cycle support could include a transition period to either organic or contract support. If you plan to use a support contractor, consider the use of the ACA

clause discussed earlier. If you have a program without the ACA, consider negotiating it into your next contract modification.

6

Heart Transplant

Most programs today rely considerably on commercial hardware. This commercial hardware seldom comes with assurance of the Reliability, Availability, and Maintainability (RAM) we expect in military systems. Your trade-off is a higher risk for technology and the low cost of commercial hardware, along with the life cycle cost reductions.

The fact remains that most cutting-edge technical development is no longer conducted for the military. For our program, we want the most forward-looking technology on the planet—accompanied by all the testing and RAM data expected of a mature fielded system. When we decide to use commercial hardware, we make a tacit decision to accept commercial standards.

Symptoms of sickness include a challenge to the ruggedness of component hardware, concern for configuration control of component hardware, and questions about the vendor contractor's ability to provide spare, repair, and replacement hardware into the future.

This concern is a sham. The government never knows about future configuration control, vendor support into the future, or upgrades to current capability having a downward compatibility with current hardware. The crux of the matter involves a cost vs. risk trade-off. A decision to spend more for development using militarized hardware has a multiplicative cost effect over the life cycle of the system.

7

Software Development Gestation

A mother needs nine months to gestate a human baby. Nine well-motivated mothers working closely together cannot gestate in one month. Likewise, software development always takes more time than you desire. The fact that a contractor proposes completion of software development in a shorter time so as to comply with your RFP does not change the actual development time required.

The first symptoms of software term extension will include slippage of "inchstones," while holding major milestones constant with the intent of making up time in some creative way—usually called thinking "out of the box." The box in this case consists of bypassing some constraint of the Software Capability Maturity Model (CMM). Compliance with this CMM probably influenced your contractor selection procedure in the first place.

The Rx for software term extension must occur with the very first inchstone slippage. Take this first slippage seriously in spite of assurances from both the government and contracting teams that they can make up the slip—they probably can't. Workarounds such as going to block testing with whatever capability is available on a pre-specified date do not alter the fact that you are behind schedule.

8

Patient Loses Interest in Life

The user and user representative campaigned for the system with all its accompanying capabilities. Despite their initial enthusiasm, some users lose interest in a program after program initiation. This can happen when a key proponent retires or transfers. Their backfill may lack the commitment of the predecessor. Every program needs a user champion. If you lose the champion, you will likely lose the program.

Symptoms of this disease include the transfer or retirement plans of your champion. In addition, note when the champion cannot participate in program decisions at a previous commitment level. The champion may have a new pet project to push. The champion may lobby for more of the features traded out that we discussed in Fattening of User Requirements.

Recruit champions! From the start, broaden your base of program support by bringing in user representatives to observe prototype testing. Invite them to program updates. Start to build a sense of ownership in a wider range of users.

With the Right Treatment, the Prognosis is Good

Dr. Program Manager will find the program loaded with symptoms. As with the medical counterpart, Dr. Program Manager must determine which symptoms are real and which amount to only a transitory discomfort.

Editor's Note: The author welcomes questions or comments on this article. Contact Knapp at *Dan_Knapp@stricom.army.mil.*

Inside DAU-DSMC

Retired Army Col. Joseph E. Johnson became the Director, Strategic Planning Action Group, effective Dec. 16, 2001. Prior to his retirement from military service, Johnson served as Dean of College Administration and Services, DSMC, and more recently as Director, Administration and Services, DAU, from April 1998 to December 2001. He came to the University from his former position as Commander, Defense Contract Management Command, Baltimore-Manassas. A graduate of Washington and Lee University, Johnson holds an M.S. in Contract and Acquisition Management from Florida Institute of Technology. In addition to the U.S. Army War College, he is a 1993 graduate of DSMC's Program Management Course.

DEPARTMENT OF DEFENSE NEWS RELEASE

Navy Establishes Intranet Program Office

The Department of the Navy announced today the formation of the Navy-Marine Corps Intranet (NMCI) Program Office effective Feb. 11, 2002. The program office has been created to be the centralized point of authority and accountability for the NMCI program. Program Manager will be Rear Adm. Charles L. Munns. The Deputy Program Manager will be Marine Corps Col. Robert Logan.

"NMCI is a critical part of transforming the Navy/Marine Corps team to meet this nation's future security," said Navy Secretary Gordon R. England. "It is also a very complex undertaking, and one that is a dramatic departure from the traditional ways of doing business within the Department of Defense. These management initiatives will [continue] to move forward on this essential program."

Senior-level review of the program office will be accomplished by an NMCI senior executive council headed by John Young, Assistant Secretary of the Navy for Research, Development and Acquisition. Council composition is expected to include Department of the Navy representatives from operations, finance, training, and testing as well as industry leaders.

Munns, a 1973 graduate of the U.S. Naval Academy, earned a master's in computer science from the University of Colorado in 1980. He is now the Commander of Submarine Group Eight and Commander Submarines, Allied Forces South in Italy. Logan is a 1976 graduate of Washington State University with a bachelor's degree in electrical engineering. In 1983, he earned a master's in electrical engineering from the Naval Postgraduate School in Monterey, Calif. He is now serving as the Director, Systems Engineering and Integration Division at the Marine Corps Systems Command in Quantico, Va.

Editor's Note: This information is in the public domain at *http://www.defenselink.mil.*

Regarding Gibson LeBoeuf's article, "Foreign Military Sales (FMS) Reinvention in the Department of the Navy," which appeared in the November-December 2001 issue of *Program Manager*—great article! As a retired Navy commander, it's good to see the Navy lead the way! As a member of the DTSA [Defense Technology Security Administration] policy team, I've attended several international conferences and committees that LeBoeuf has also attended and we've spoken several times. However, that is not the reason I write...I would like to address several issues [mentioned in his] article.

First, the DoD 5000 series: Thank you. I am forever reminding people to familiarize themselves with the series, particularly (for me) DoDD 5530.3 w/Change 1 (i.e., International Agreements). In addition to the statement, "Early in the life of a program, an analysis of alternatives needs to include a careful review of what our allies can offer," I would like to invite attention to the requirement for a Technology Assessment/Control Plan (TA/CP) to be developed and approved during the embryonic stages of a program. In accordance with 5530.3, Change 1, the TA/CP requirements meet the technology assessment prerequisite for...international agreements.

"Components will consider and incorporate, as appropriate, all applicable NDP [National Disclosure Policy] and DoD technology transfer policy guidelines, and Service disclosure policy."

Moreover, the TA/CP "identifies the foreign technologies or other benefits that the United States is likely to acquire as a result of the proposed agreement." The TA/CP (and the derived Delegation of Disclosure Authority Letter [DDL]) requirement was further emphasized by then Deputy Secretary of Defense [John] Hamre in his Sept. 9, 1999, memo to all Service Secretaries, Chairman of the Joint Chiefs of Staff, Under Secretaries of Defense, Assistant Secretaries of Defense, and Directors of Defense Agencies entitled, "Security and Foreign Disclosure Obligations."

Lastly, as a participant in the DCS [Direct Commercial Sales]—and to some extent the FMS [Foreign Military Sales] technology transfer process—I'm keenly interested in LeBoeuf's "Improve the Disclosure Process" Working Group and "Team International" concept, specifically as they relate to the technology security/transfer process, although admittedly I have not heard of either.

Again, great article and even better initiative. Thanks.

—Pete Dougherty
Senior Foreign Policy Analyst, DTSA
Alexandria, Va.

DAU Hosts WACUC Strategic Learning Symposium

Building Bridges—Pursuing Partnerships

SYLWIA GASIOREK-NELSON

Representatives of government-industry corporate universities gathered from across the area on Nov. 8, 2001, to attend the Washington Area Corporate University Consortium (WACUC) "Strategic Learning Symposium." The WACUC, founded three years ago, is a forum for collaboration and partnership among businesses, government, and higher education organizations applying the corporate university model.

Its membership includes professionals in business, government, and higher education who promote networking, partnership, and cooperation. Their efforts focus on providing the very best educational experiences for people who are constantly growing and learning as they move through their careers.

Hosted by the Defense Acquisition University (DAU), Fort Belvoir, Va., the Symposium featured distinguished speakers, presentations and workshop sessions, a plenary session, as well as exhibits from industry and government.

DAU Symposium Coordinator Wayne Glass welcomed the participants to the Fort Belvoir main campus and acknowledged two distinguished visitors—Dr. Jerome F. Smith, DoD Chancellor of Education, and Dr. James "Jim" McMichael, Director of Acquisition Education, Training and Career Development, Office of the Deputy Under Secretary of Defense (Acquisition Initiatives). Glass also expressed gratitude to all the speakers and exhibitors who contributed to making the Symposium a success.

> "This network is as strong as our membership. As we come together from business, government, and higher education, we get to understand our different cultures a little bit better; we get to understand why some things work and why some things don't work, and we get to learn how to make things worth growing."
>
> —Dr. Toni Ungaretti
> Johns Hopkins University

Opening remarks by Toni Ungaretti, member of the WACUC Board of Directors.

Closing remarks by Dr. John Wells, Corporate University Enterprise, Inc.

Meridian Knowledge Solutions Exhibit.

Strong As Our Membership

Dr. Toni Ungaretti, member of The WACUC Board of Directors and Assistant Dean and Director of the Division of Undergraduate Studies in the School of Professional Studies in Business and Education, Johns Hopkins University, began her remarks by saying, "We, at

Gasiorek-Nelson is a full-time contract editor for Program Manager *Magazine. She is employed by SRA International, Inc., Arlington, Va.*

Photos by Army Sgt. Kevin Moses

DAU President Frank J. Anderson Jr., Symposium keynote speaker (right), reviews exhibits with DoD Chancellor for Education and Professional Development, Dr. Jerome F. Smith.

DAU e-Learning Exhibit

John Hickok, DAU Knowledge Management Officer and PM CoP Co-Lead, conducts workshop on Knowledge Management and Communites of Practice.

Workshop—Linking Skills, Training, and Documentation with Human Resources Workforce Development

WACUC, are very exited to have this opportunity to be here at the DAU's beautiful facilities. We're delighted with our host, and we are absolutely grateful to all who worked tirelessly to make sure that this all happened."

WACUC allows members the opportunity to network, to talk to each other, to get to know each other, and to make sure that each of the member organizations is the best at providing high-quality education. The Consortium is also an excellent forum for members to really think about how to expand corporate value through learning.

"This network is as strong as our membership. As we come together from business, government, and higher education, we get to understand our different cultures a little bit better; we get to understand why some things work and why some things don't work, and we get to learn how to make things worth growing," she stated.

Introducing the keynote speaker of the day, Frank J. Anderson Jr., DAU President and member of the WACUC Board of Directors, she told the symposium attendees, "…to sit back, relax, enjoy, learn, and network—that's what the day is going to be all about."

From Government Training Institution to Corporate University

Setting the tone for the Symposium, Anderson said, "There is no doubt that the challenges we face as an educational institution, in terms of achieving goals and performance objectives, are really significant. Today, I'm going to share with you the transformation process that we're going through, and this is the experience of one corporate university." He also stated that any transformation initiative, or major initiative, requires a significant amount of communication and partnership.

Partnerships like WACUC are the best way to share best practices, borrow ideas and concepts, and share experiences. In the last few years, DAU changed greatly

More About WACUC

A Model for Workforce Education

Founded in 1999, WACUC was created to offer opportunities for learning about the trends and transitions that businesses and higher education experience in designing and delivering workforce education programs. The Consortium brings businesses and education together to work toward a common goal-meeting the needs of the employed adult learner. The Consortium includes representatives from the public sector, private industry, and higher education. An original core of 10 members grew to over 40 within the Consortium's first year of service. WACUC is now recognized as a model for a national collaborative of corporate universities' practitioners and related professionals.

Goals

- To bring business and education together in an open arena to prompt discussion on major corporate university issues.
- To encourage regional networking among business, industry, and education in the Washington D.C. area.
- To foster a spirit of shared control and shared success in meeting the needs of the continuous learning population.

Opportunities

WACUC provides five formal opportunities per year for its members and other interested participants to meet and network. Held on the first Tuesday of January, March, May, September, and November, the sessions include keynote lectures, group discussions, and technology expositions. These sessions help members explore:

- Corporate university data
- Benchmarking resources
- Networking opportunities
- "Nuts and bolts" issues
- Cutting-edge advances in promoting and managing a corporate university.

WACUC members also have access to an online discussion forum allowing them to continue the dialogue from the formal sessions as well as pose and respond to questions.

as an organization. "We have changed our outlook, and we're reaching outside the organization in all directions," Anderson said. Through WACUC, DAU is forming strategic alliances with other Corporate Universities, and "We are studying and trying to emulate the best practices of other universities through benchmarking.

"It is important to share—to show people out there in government agencies and civilian agencies what we're doing," said Anderson. "But to share, you have to have something good to offer. What we are doing makes sense—there are people outside our organization who are now benchmarking what we are doing at DAU," he noted.

DAU started the transformation process by putting together a strategic plan, engaging a number of members from the Acquisition Community.

"We went to a number of reviews with the senior leadership to make sure that we're on track in terms of their vision on acquisition training," Anderson said.

The DAU reengineering process focuses on answering two questions:

- What are the DAU customers' needs?
- How can DAU best meet customer needs?

Out of that came the DAU Corporate Strategic Plan—*Smart Business 20/20*. "The fundamental reason that we do acquisition training is that half of the DoD community shapes Smart Business deals. We're in business because the Department believes that by providing acquisition training we prepare the Acquisition Community to be successful in their workplace; because of that, DoD is willing to invest in training," Anderson stated.

In building a "Best in Class" corporate university, DAU focuses on five goals that are closely aligned with the five goals set by Under Secretary of Defense (Acquisition, Technology and Logistics), E. C. "Pete" Aldridge Jr. DAU's goals, which complement Aldridge's five goals, focus on five actions:

- Provide our stakeholders and customers what they need when they need it.
- Operate a Premier Learning Enterprise.
- Advance Excellence in Acquisition Business Practices.
- Employ Knowledge Management to enhance Learning and Productivity.
- Provide Stakeholders and Customers with a Premier Faculty and Staff.

DAU is methodically and successfully moving forward with transformation. The results have been positive, "… but we still have significant major milestones to achieve," Anderson said.

To become one of the leading corporate universities, DAU is changing from a Classroom-centric to a Network-centric Learning Environment. The new learning construct also involves Performance Learning Models, Case-based Training, Communities of Practice (CoP), Customer-centric Organizations, and Strategic Partnerships.

"Success is when people from outside the organization start to believe that we are on the right track—that builds our reputation. And that is happening. It's important to build our reputations, particularly to build relationships with those on the leading edge. The more people know about us and the more people we reach, the better it is for our institution," Anderson emphasized.

According to Anderson, DAU's top priorities in the commitment to transformation are:

- Successfully Execute *Smart Business 20/20* and *Fast-Track Initiatives-I.*
- Reengineer Program Management Learning Construct.
- Start Organization Reengineering.
- Define and Implement *Fast-Track Initiatives-II.*
- Reengineer Contracting Learning Construct.

- Complete Organization Re-engineering.
- Team Building.

In closing, Anderson stated that considering the way education was taught in the past—where someone set the days, someone set the place, and someone set the time—DAU has created a powerful learning environment.

"We're in the lead now—we're involved in many more areas than before; we are on track, and doing it right," Anderson said. "We are asking our staff and faculty to do different jobs and new jobs, to take the challenge to change from being part of a *good* organization to being part of a *great* organization.

"We know the environment is changing," he acknowledged, "and the way we learn is changing, and we are doing what it takes to move from training in the 20th century to learning in the 21st century."

WACUC As a Community of Practice

John Hickok, DAU Knowledge Management Officer, provided an overview of the DoD Acquisition Knowledge Management System road map and its emphasis on developing Web-based CoP to support the AT&L workforce. The just-released Program Management Communities of Practice (PM CoP) was presented to set the stage for a potential WACUC CoP development.

What is CoP? A CoP, Hickok explained, is a group of people who form around a topic/domain to share ideas, information, and lessons learned; learn together and evolve the knowledge of the domain; and create and manage tools, techniques, as well as the process of the domain.

What can be gained?

- Productivity
- Creativity
- Teaming
- Collaboration
- Faster Decisions
- Better Decisions
- Quality of Life

"We're in the lead now–we're involved in many more areas than before ... We are asking our staff and faculty to do different jobs and new jobs– to take the challenge to change from being part of a good organization to being part of a great organization."

–Frank Anderson Jr.
DAU President

- Practical Use of Lessons Learned
- Corporate Knowledge.

The most successful CoPs share knowledge across organizational divisions in order to include many different perspectives and concerns on the topic. Instead of, or in addition to communities formed around a particular problem area, CoPs could also be formed for functional areas across the systems.

According to Hickok, formation of CoPs is important to:

- Facilitate the sharing of domain information and knowledge.
- Evolve the discipline of the domain.
- Achieve a greater sense of communication with peers.
- Improve innovation.
- Save time looking for information.

Fulfilling its goal—supporting the Acquisition Community— the Knowledge Management team focuses on the following objectives:

- Establishing and supporting communities of practice in a sharing environment by enticing, exciting, and engaging community members (novices and practitioners, all Services, government, and industry) in the sharing of knowledge.
- Improving community performance by providing access to existing knowledge resources and creating new knowledge framed in the context of daily work processes as determined by the community.
- Capturing the corporate knowledge of the retiring workforce and transferring it to the new workforce.
- Establishing a PM CoP "Portal" on the World Wide Web that incorporates the functions determined necessary by the community.

e-Learning

Chris St. John, DAU Distributed Learning Specialist, provided an outline on how DAU is incorporating the Advanced Distributed Learning (ADL) Initiative into its strategic planning. He also discussed the strategies that make transforming the corporate university into an "academic force multiplier" successful.

DAU is in the midst of major technology evolutions and "… our mission is to support certification training and a culture of continuous learning," he said. E-Learning provides for convenient, cost-effective access to education, training, performance support, and expert advice to all members of the DoD Acquisition Community.

DAU's vision, *Just the Right Stuff*, is:

- Just the right content
- Just the right person
- Just the right time
- Just the right device
- Just the right context
- Just the right way.

To achieve the University's goals, St. John said that DAU built a technical road map highlighting strategies, indicators of success, and ways of measuring progress at regular intervals. For fiscal 2002, he said that these strategies will focus on learner-centered services, development of digital knowledge repositories, and the technical infrastructure to support students, faculty, and other stakeholders.

In keeping with the DAU *Smart Business 20/20* plan and strategic vision, the current key requirements are to:

- Enhance workforce readiness.
- Train to the standard.
- Exploit technology.
- Accelerate courseware redesign.
- Demonstrate a Return on Investment.
- Change cultural paradigms.
- Design training to support DAU transformations.
- Support DoD ADL Acquisition Knowledge Management System initiatives.

Outlining DAU keys to success, St. John emphasized that DAU's major goal is to field a total package of e-learning and knowledge management tools that will include all three components of the DoD ADL initiatives—infrastructure, learner interface, and content.

These components are the keys to DAU's long-term vision. They include implementation of a fully functioning e-learning system that supports a wide range of learning needs while reducing costs and increasing workforce effectiveness, based on prioritization and funding availability.

With the emergence of powerful ADL tools, a new mission and goals have been established to provide "lifetime" support to the workforce—any time, anywhere. Concluding his remarks, St. John said, "In order to meet this challenge, it is clear that DAU must utilize this new technology as an academic force multiplier."

Breakout Sessions

The Symposium offered the participants the following 10 workshops:

> "The primary source of revenue for us is not money—it's knowledge. It's what's going on in the corporate university movement. And that's all of you."
>
> —John Wells
> President
> Corporate University Enterprise, Inc.

- The e-Learning Manager: Core Knowledge and Skills—Dr. Eugene Rubin, University of Maryland
- Linking Skills Training and Documentation with HR
- Workforce Development—Scott Brainard, Johns Hopkins University
- Partnerships: Levels, Benefits and Commitments—Dr. Toni Ungaretti, Johns Hopkins University
- Building An Enterprise-Wide Infrastructure—Elizabeth Volk, P.E., Executive Vice President, Meridian Knowledge Solutions, Inc.
- Knowledge Management and Communities of Practice—John Hickok, Defense Acquisition University
- Running Your Corporate University Like a Business—Sue Esselman, Corporate University Enterprise
- Distance Learning at Northern Virginia Community College: A Commitment to Excellence—Dr. Monica Flynn Sasscer, Northern Virginia Community College
- Action Learning—Dr. Mary-Jo Hall, Defense Acquisition University
- Making a Business Case for e-Learning—Jack Mann, Booz Allen & Hamilton.

THINQ Session

The plenary session delivered by Dr. John Setaro, THINQ Learning Solutions, Inc., provided the latest research with hard data documenting the impact of training on:

- Increasing productivity
- Reducing turnover
- Reducing occupational injuries
- Increasing retention
- Reducing "list opportunities.

WACUC—A Strategic Learning Climate

Summing up the day's events, John Wells, President, Corporate University Enterprise, Inc., said, "We [WACUC] certainly want to thank DAU for being a corporate university leader in sponsoring this event."

DAU is a primary sponsor, Wells continued, and "…you don't get too many programs—all day-programs—with this caliber of speakers. We, who are responsible for strategic employee development within our respective organizations, are now challenged. Our programs must demonstrate quality," Wells said, "in the alignment of development programs with our organizations' vision and goals; and we must accept the accountability of assuring that the employee development initiative has a positive return on investment."

He emphasized that "… corporate universities are up and rolling, but there is just a lot of work to be done." He also said, "The primary source of revenue for us is not money—it's knowledge. It's what's going on in the corporate university movement. And that's all of you."

Wells encouraged all the participants to take advantage of being a part of WACUC. "If you are in the corporate university mode, if you are in the corporate university business, if you are up there trying to say, 'I want a strategic learning climate for my company,' the [Washington Area] Corporate University Consortium can help you."

WACUC and the Future

The success of WACUC to date is its creation of a network among government, corporations, and higher education to share their needs, approaches, and capabilities in addressing the education needs of their workforces. Because WACUC is the only such organization, not only in the Baltimore-Washington

region but also in the nation, the Consortium has received numerous requests to create a national organization with a similar focus.

The impact WACUC will have over the next five to 10 years is difficult to imagine. In its short 2½-year tenure, it has brought together organizations that normally do not interact. It has served as a catalyst to connect corporations and government to private and higher education institutions, to develop educational experiences for employees that are tailored to their specific needs, and to address the vision of each organization. The WACUC will continue to provide a source of support and advice to its members for years to come.
The most important thing that WACUC accomplishes, however, is bringing together all the stockholders of an effective workforce. It connects expertise across organizational boundaries. The challenges for the future include the need to continue to assess the needs of its members and use this information to design and deliver timely and targeted professional development and networking opportunities.

In the future, WACUC will establish a research agenda and will formulate questions, collect data, analyze experiences, and disseminate findings on issues related to corporate universities, their operations, and indicators of their success. In addition, the WACUC will create a database and begin to collect and disseminate information related to organizations engaged in workforce learning activities. It will serve as a source of support and information for its member organizations and the broader corporate university community.

WACUC benefits the local community by providing a source of information and support for organizations interested in providing appropriate and effective educational experiences for their employees. It also assists them to identify and contact private organizations and institutions of higher education that can assist them in this process.

On a national level, WACUC's members have delivered presentations at national and international conferences on corporate universities and partnerships in the business, government, and higher education arenas. One of WACUC's future visions is the development of an online WACUC community where members can make contributions of knowledge "objects" and enter into collaborative activities that will help job performance and continuous learning.

WACUC Members

At present, the consortium consists of 60 members, representing 30 organizations. In addition to DAU, other member organizations include Booz, Alan & Hamilton; the Erickson Foundation; The George Washington University; Corporate University Enterprise; National Institute of Standards and Technology; Regent University; United States Postal Service; the Pentagon Federal Credit Union; the Patent and Trademark University; Anne Arundel Community College; United States Bureau of Census; University of Maryland; the Washington Post; the Humane Society of the United States; Northern Virginia Community College; and Johns Hopkins University.

WACUC and DAU

WACUC's role in the education of the Acquisition Workforce has been to assist DAU, a member and a major WACUC corporate sponsor, in making connections with institutions of higher education to address educational needs. At present, DAU is working closely with Northern Virginia Community College and Johns Hopkins University.

The WACUC organization and conference activity itself is the first step toward sharing of knowledge in a shared practice of education and training. DAU experiences and achievements in the development of online CoPs and e-Learning programs will help other consortium members in their similar journeys.

Editor's Note: To read more about the WACUC and its activities or how to become a member, visit the WACUC Web site at *http://www.wacuc.com*.

COSSI PROJECT CALL

The Commercial Operations and Support Savings Initiative (COSSI) has issued its project call. Proposals may be submitted by any DoD organization and are due May 31, 2002. Proposals submitted by non-DoD organizations will not be accepted. A non-DoD organization wishing to take part in the COSSI Program should work with an appropriate DoD organization and have that organization submit a proposal.

More information about this project call, including all necessary forms, is included at: *http://www.acq.osd.mil/es/dut/cossi/FY03/ProjectCall.html*

U.S. ARMY PUBLIC AFFAIRS NEWS RELEASE

Claude M. Bolton Jr.

Sworn-in as New Assistant Secretary of the Army for Acquisition, Logistics and Technology

Claude M. Bolton Jr. was sworn-in Friday, Feb. 1, 2002, as the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA[ALT]) in a ceremony at the Pentagon hosted by Secretary of the Army Thomas E. White.

Secretary of the Army Thomas E. White (left) swears in Claude M. Bolton Jr. as the Assistant Secretary of the Army for Acquisition, Logistics and Technology during a Feb. 1 ceremony at the Pentagon. Holding the Bible is Bolton's wife, Linda. Photo by Richard Mattox

Bolton, a native of Nebraska, is the principal advisor to the Secretary of the Army for all acquisition, logistics, and technology functions of the Army. In this position, he serves as the Army Acquisition Executive, the Senior Procurement Executive, and the Science Advisor to the Army. Also, he serves as the senior research and development official for the Department of the Army. Among his responsibilities as ASA(ALT) are: appointing, managing, and evaluating Program Executive Officers and Program Managers; managing the Army Acquisition Corps; and overseeing research, development, test, evaluation, and acquisition programs.

Bolton brings a warfighter's perspective to his job. A veteran of more than 30 years of active military service, he recently retired as a Major General in the United States Air Force (USAF) following a highly decorated career. Some highlights of Bolton's assignments include serving as a test pilot for the F-4, F-111, and F-16; Program Executive Officer for the Air Force Fighter and Bomber programs; and the first Program Manager for the Advanced Tactical Fighter Technologies program, which evolved into the F-22 System Program Office.

Bolton received his USAF commission in 1969 through the University of Nebraska's Air Force ROTC Program, where he was a distinguished graduate. His education includes a bachelor's degree in electrical engineering from the University of Nebraska at Lincoln; a master's in management from Troy State University, Troy, Ala.; and a master's in national security and strategic studies from the Naval War College, Newport, R.I.

Bolton expressed, "My family and I are honored, humbled, and excited about becoming part of this great Army team. From Secretary White, Gen. Shinseki on down, we have been made to feel a valued team member from Day One. I deeply appreciate that and look forward to doing whatever I can to ensure the U.S. Army remains the most capable, most powerful, and most respected army the world has ever known."

Bolton is married to the former Linda Roll of Alma, Neb. They have two daughters: Cynthia who resides in Manhattan, N.Y., and Jennifer who resides in Clifton, Va.

Editor's Note: This information is in the public domain at *http://www.dtic.mil/armylink/news.*

New Version of PM CoP Portal Now Online!

http://www.pmcop.dau.mil/pmcop/

The Assistant Secretary of the Navy for Research, Development, and Acquisition (Acquisition Reform Office), and the Defense Acquisition University (DAU) have updated their recently developed Program Management Community of Practice (PM CoP) Web site. In addition to a new user interface, the site features better support for discussion forums, member information for community collaboration, and new content in the areas of contract management and risk management.

The PM CoP portal and communities are helping the program manager, the program management team, and their industry partners perform their jobs more effectively through knowledge sharing. PMs now have anywhere, anytime (24/7) program management support for job performance through a Web portal. Populated with links to net materials, lessons learned, questions, best practices, yellow pages, and chat capability, the goals of the PM CoP include: knowledge capture and retrieval, collaboration, solution development, new idea generation, and online mentoring of acquisition workforce personnel.

The development and support team consists of executive leaders, an Overarching Integrated Product Team (IPT), and Working IPTs, which include joint leadership and membership. Through the participation of 30+ current and former program managers in February 2001, five key high-priority kick-off areas were identified in supporting a PM community :

- Risk Management
- Contract Management
- Software Acquisition Management
- Systems Engineering
- Earned Value Management

Currently, Risk Management, Contract Management, and Systems Engineering communities are linked to the portal. A previously developed Total Ownership Cost (TOC) community has also been integrated into PM CoP. Links are also provided to information sources on various subjects of interest to the Program Management community, which are candidates for future communities of practice.

How can the PM CoP benefit you and your program? The PM CoP supports program managers from the ranks of the DoD acquisition, technology, and logistics workforce and their executive teams by providing a valuable resource to aid their program management efforts in several areas:

- Solving real-world problems and performing tasks typical of the acquisition workforce.
- Managing requirements.
- Performing political, social, technical, economic, and programmatic activities.
- Achieving organizational goals more efficiently.

Long-Term Plans

The long-term PM CoP vision calls for community support for all key acquisition functional areas. Eventually, the Navy Acquisition Reform Office and DAU anticipate that there may be around 40-50 key functional areas. In the coming year the Navy Acquisition Reform Office, Defense Acquisition University, Office of the Secretary of Defense, and Defense Contract Management Agency will partner to develop an Earned Value Management focus area within the PM CoP.

PM CoP
Program Management
Community of Practice

What are you waiting for? Log in now, learn, and share. Your knowledge contributions are what the community is all about!

Writing the Book on Getting SMART

Developing Leadership Skills

MARY-JO HALL • CADET 1ST CLASS ISAAC BELL, USAFA

"Continued learning is a key to effective leadership because no one can know everything there is to know."

—Mike Krzyzewski
Leading with the Heart

So, you've really made the BIG time. You are on **the list** as a project/product manager. What an achievement! What success! A dream come true. Wow!

You've enjoyed the celebratory dinner and e-mailed all your professional associates with the good news. You've attained all your certifications (or will get them en route to the new PM job), and you've even "penciled in" a Change of Command date on the calendar. Now what do you do?

"It Depends"

What did they teach you at the Defense Acquisition University/Defense Systems Management College (DAU-DSMC)? The answer, as you may recall, is invariably, "it depends!"—right? Now that you've been selected as a PM, the primary "it depends" for what you do next is based on *when* you're taking the position.

If it's within a few weeks, then that presents one set of circumstances. However, if it's within six months and you are going to the Advanced Program Management Course (APMC) en route, that presents a completely different set of circumstances. Having time allows for more preparation. But a key question still remains: What do you do to prepare to be the best PM you can be?

While one aspect of preparation for becoming a PM is certification in one of the 12 acquisition career fields covered by the Defense Acquisition Workforce Improvement Act legislation, another is taking time to get to know as much about your unique program as possible. However, acquiring all the certifications and knowing the program are necessary—but not enough. To manage and lead a program/project with a high level of excellence, individuals need to know themselves.

"Know Thyself"

But how does one, as the ancient philosphers might have phrased it, "Know Thyself"? And doesn't this get uncomfortably close to "staring at your navel," "touchy feely," "in pursuit of self"-type personal reflection? What does it really mean to "Know Thyself"? Does this mean knowing your Myers-Briggs pref-

Hall is a professor at the Defense Acquisition University working with both the Advanced Program Management Course (APMC) and the Executive Program Management Course (EPMC). Bell is a Management major and serves as a Cadet Corps leader at the U.S. Air Force Academy. During summer 2001, he served as a Research Intern at the Defense Acquisition University on a team to develop a strategy map and scorecard for the Program Manager's Community of Practice.

erence? Does it mean understanding the feedback from PROFILOR, the 360-degree feedback instrument used at APMC? What does it mean? This article describes the SMARTbook, an APMC elective that helps individuals write their own book on being SMART—about *themselves*.

Individual Leadership Project

For many years, the Individual Leadership Project (ILP) has remained an important element of the Program Management and Leadership (PML) curricula, and before that, the Managerial Development (MD) curricula at DSMC. Historically, many of the students in APMC are en route to a project or program office as the program or project manager. These students were always extremely receptive to learning all aspects of program management because of their pending assignment, i.e., the project was real and imminent, thus instilling a sense of urgency.

Many students used the ILP as an opportunity to prepare for their new role. However, each person was unique, and each program management office was unique. Given these constraints, the students and respective faculty members would work jointly within the bounds of the curriculum requirements to tailor and customize the project.

In the summer of 1997, [then] Navy Cmdr. Walt Pullar was preparing to take formal command of a Contracting Command the week after graduation. Pullar used the project to help plan and prepare. He designed his project to include the formal presentation that would be made at his Change of Command. He also developed his philosophy of leadership or what is generally referred to as the "commander's intent," which includes his values, his goals, and the action items for getting started. Once he completed the academic requirements of his ILP, the *real* learning started.

After his final ILP paper was returned with his grade, and prior to the end of APMC, he had a completed standard Command Briefing, a Change of Command speech, a "to do" list for Week No. 1, a "to do" list for the first six weeks, and other goals for his assignment as PM. While working with the PML instructor, the student was able to "jump start" an otherwise stressful event. He reported to his command SMART.

The student's work with this project was an incentive for instructors to share their positive experience with other students. Sharing with many students and other instructors encouraged more students to do similar projects, each tailored to the particular needs of the person and the program.

In 1998, a Navy commander arrived at APMC and heard the same spiel about the ILP. "Oh, great! Another paper for the instructor," he later told us. At this point, the student viewed the project as a "to do" for the instructor and an academic exercise that needed to be checked off the "deliverables list."

As he heard more options and learned about the possibilities the project offered in preparing him for a command assignment, he became more engaged. And as he began to think more about it, options grew increasingly clearer. One day, in a blinding flash of the obvious, an "aha" registered in his thought processes. He was on his way to a Joint Program Office to be a PM. Since his background and experience was on the operational side of DoD, he did not know much about joint assignments or the acquisition community.

Using the project as a vehicle, he decided to design his "strategic approach and personal vision" for the program. He put in his proposal and received a few more ideas. Several conversations with the instructor led to more ideas. Voilà! He completed the project and turned it in.

While he "passed" with a "satisfactory plus," he was astonished at the comments and suggestions on the paper when it was returned. More ideas surfaced as he started peeling back the onion on this new assignment in light of the new questions, comments, and ideas. The student took these ideas from the instructor and incorporated all of them into his project. In fact, he changed some of his electives to be able to accommodate more planning and preparation for his new command. He truly was engaged in the process and passionate about the learning, primarily because it was *his* new job. Not only did he end up with many ideas, but he also put together a briefing, which he then used to garner even more ideas as he interviewed executives in the Pentagon and general officers at DSMC.

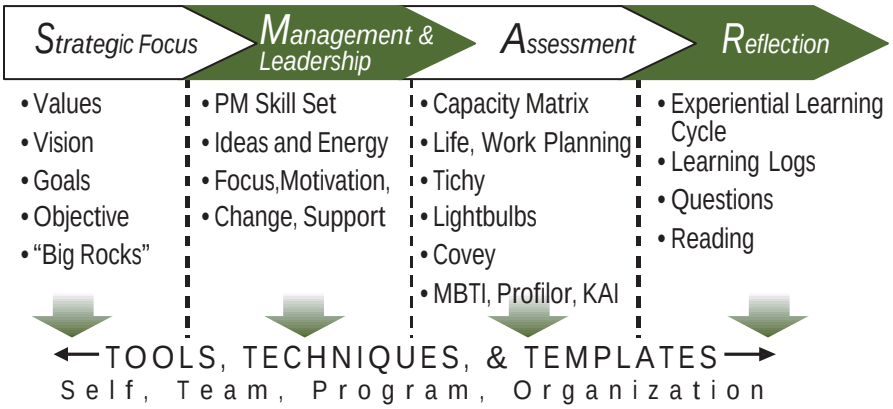
As more and more students used the PML project to prepare for becoming a program or project manager, the ideas, additions, suggestions, and examples increased. During APMC 99-2, one of the students referred to the individual leadership project in preparation for becoming a PM, as developing a SMARTbook—and the name stuck.

PM SMARTbook Elective

During APMC 00-1, the PML faculty offered an elective to assist those members of APMC that were working on SMARTbook in sharing ideas and resources. The elective required more structure and discipline in presenting the materials as well as making the resources and ideas available to all. Using what the students found useful in getting to know themselves and how their leadership impacted others, the SMARTbook model (Figure 1) was developed.

The PM SMARTbook elective supports DoD Acquisition, Technology and Logistics Workforce members as they prepare to lead others in a SMART way. The elective is a collection of tools and techniques from a variety of sources, organized around learning more about the organization, the program, the team, and most importantly, the self as a leader. The emphasis for SMARTbook, however, is preparing to lead others as a PM. Designed for those certified Level III in Program Management or presently at APMC, the elective does not attempt in any way to be a technical course for program management. Rather, its focus is to enhance personal leadership, thereby allowing students to excel in the role of a PM.

FIGURE 1. SMARTbook Model



The PM SMARTbook tools and techniques are built primarily for the project or program manager. For example, the team tools revolve around the concept of Integrated Product and Process Development and Integrated Product Teams. Many of the tools are used in the present APMC curriculum.

However, while the context is program management, the SMART tools and techniques have universal application for any leadership position. Many students who are taking the elective will not be PMs, but will find the tools useful in preparing for other leadership roles.

Types of Tools, Techniques, and Templates in the PM SMARTbook

The PM SMARTbook is a collection of ideas and tools that allow program or project managers to look at the program from the perspective of the organization, the program, the teams within the program, and themselves as leaders within this context. The tools and techniques to look at the organization include the "big picture," i.e., the overall strategy, customers, etc.

The program tools include a program summary sheet developed by students, a "go to" template, and a profile adapted from the National Quality Program criteria for performance excellence. The team tools and techniques are primarily those used as part of the PML curriculum in terms of the Team Performance Model (Figure 2), which includes tools to perform various aspects of the model.

The tools under the "self" rubric are personal development techniques that others have found useful to leverage or enhance strengths to improve weaknesses. SMARTbook is also a collection of many tools, thus providing the opportunity to pick and choose.

Self—The Heart of SMARTbook

Approximately 80 percent of the tools and techniques are geared around the *self*. These tools and techniques are broken down into SMART areas:

- **S**trategic focus
- **M**anagement and leadership
- **A**ssessment of self
- **R**eflection for learning and general planning
- **T**ools, techniques, and templates for decision making.

The **S** is for "**S**trategic focus." Stephen Covey advises, "Start with the end in mind." As a program manager, you can expect a 2½- to 4-year tour. The starting point for a strategic focus is to visualize what your last day on the job will look like. An exercise to help focus this type of thinking includes such things as writing your end-of-tour award, writing the 2006 Program Manager cover story that has your photo on the cover as "The PM of the Year," or perhaps writing your own obituary.

Other aspects of a strategic focus include developing what Stephen Covey in *First Things First* calls your "big rocks." From this you can develop your personal vision statement, your values, and your goals. The work you do in these exercises is the background for a Change of Command speech and literally forms the essence of your command philosophy.

The **M**anagement and leadership section gives ideas to stimulate thought on leading in times of change. This includes the "right stuff" research of DAU professor Dr. Owen Gadeken as well as ideas from noted authors and former students. A variety of "teaching notes" are available in this section, including ideas for formalizing an understanding of the history behind your personal leadership style.

The **A** is for assessment. The assessment section provides a variety of tools to baseline your present skill level and leadership capacity. The tools and techniques include capacity matrices, questions to help you think through the "how" of your leadership style, and the portfolio. The portfolio is useful for documenting, describing, and defending your personal assessments.

The **R**eflection section incorporates ideas for "thinking about one's thinking" or "thinking about one's actions." Tools and templates include learning logs, the experimental cycle questions, "aha" forms, and takeaway templates.

The **T** in SMART is for general tools, techniques, and templates. This section provides a variety of other tools for making decisions, solving problems, and collecting data. Some of the Mindshift Tools from Rolf Smith's *7 Levels of Change* are included. The section also includes many of the management planning and decision-making tools from the APMC curriculum as well as some of the tools from the Air Force version of the Memory Jogger.

Why Does a PM Need to Write a SMARTbook?

Does a PM really need to spend time getting to "Know Thyself?" Are all of these personal leadership tools and techniques for assessing and reflecting useful? Isn't technical competence enough? Isn't being in the military enough? Isn't prior experience enough? Aren't Board-

Select PMs selected because they are already leaders? Who has time for personal reflection?

In the fast pace of today's world, PMs and others in leadership positions are put in the role of "learners" for many aspects of their program because of the frequent initiatives to force "smart" business decisions. Initiatives such as Total Ownership Cost, Cost As an Independent Variable, Balanced Scorecard, Alpha Contracting, Knowledge Management, or Independent Developmental Evaluation are literally being learned as they are being implemented on the job. In *Results-based Leadership,* the authors posit that the half-life of knowledge grows ever shorter in most professions, requiring performers to unlearn what they know and do.

At the same time leaders are learning to implement new initiatives, they are striving to reverse unproductive processes and practices. They are being forced to improve results while eliminating bureaucratic tendencies. To lead in this type of environment, PMs must know themselves; know their strengths; know how to learn, think, solve, probe; know the areas where they are not strong; and have a level of comfort with who they are as a person and a PM . To lead from their strengths, leaders must know their strengths.

Another reason for being SMART is that "typically" PMs must "hit the ground running." Generally, PMs do not have time for extensive "thinking, planning, and reflecting." For most people, the role of PM involves relocation and getting the family settled in a new geographical area. Prior to relocating, most people are up to their ears tying together all loose ends on the job they are closing out. Once they relocate, they start the PM job with very little time.

Planning and organizing prior to starting the job gives PMs an opportunity to reflect on the big picture and their role in leading the organization toward getting the results needed to consistently satisfy customers, employees, and stakeholders.

The bottom line for why personal development is important for PMs is successful program results. Leadership is key to successful results. While many leadership qualities may be inherent to those serving as leaders, leadership skills and abilities can be expanded and enhanced. Additionally, these skills must be taught to others in the program office. A product of the elective is a SMARTbook CD ROM to allow participants access to an e-file containing all the tools and ideas.

During APMC 01-2, U.S. Air Force Academy Cadet 1st Class Isaac Bell worked on the elective as part of a research project. He organized the materials and produced a revised copy of the CD ROM to reflect the organization of the elective notebook. Updated for each session of APMC, the CD ROM includes all materials used in the elective.

A Personal Journey

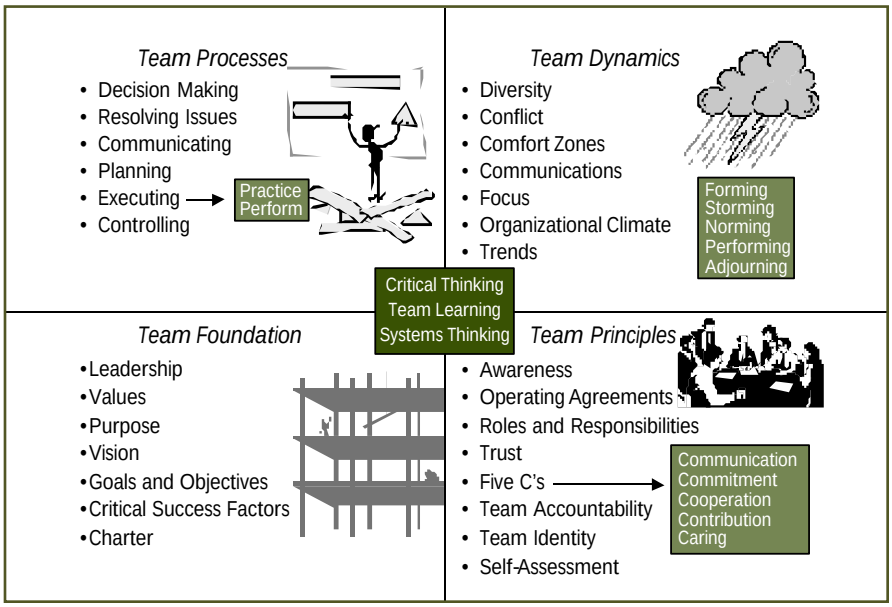
The SMARTbook is a collection of tools, techniques, and templates that others in the APMC have found useful in enhancing their leadership skills set, thereby producing better results as PMs. Designed to focus on understanding one's self in a self-directed, guided way, SMARTbook is also a compilation of a variety of tools and techniques so participants can pick and choose which of the tools best suit their needs.

Since a primary responsibility for a PM is developing other leaders, PMs must have tools and techniques to do so within the context of daily work. PMs must constantly model personal development in their actions. Asking your team to engage in personal development while failing to do so yourself, is hypocritical. Leaders cannot mentor others without knowing and articulating the techniques they use to create success. Tichy, in *The Leadership Engine: Building Leaders at Every Level,* refers to this process as developing a teachable point of view. The strategic focus, assessments, and reflection tools help build this capacity.

The elective, including the notebook and the CD-ROM, is only a map. Participants must write the real SMARTbook. The tools and techniques in the Notebook and CD-ROM serve as a road map for thinking and reflecting on personal leadership. The tools and techniques must be "worked" to create value. And just like a map, the tools and techniques can show you the direction and a bit of the terrain, but the map does not get you to your destination. Each individual must take his or her own personal journey.

Editor's Note: The authors welcome questions or comments on this article. Contact *Hall at mj.hall@dau.mil.*

FIGURE 2. Team Performance Model



AMERICAN FORCES PRESS SERVICE

Services Answer Rumsfeld's Call for New Business Practices

LINDA D. KOZARYN

WASHINGTON, Dec. 18, 2001—A day before terrorists attacked New York's World Trade Center and the Pentagon, Defense Secretary Donald H. Rumsfeld made it known he was not going to accept business as usual within the Defense Department.

He launched a campaign Sept. 10 to transform the way the military defends the nation, as well as how it does business.

The Secretary highlighted three imperatives: the need to shift resources to protect against the evolving threats of the 21st century; the need to attract and retain talented people to both military and civilian service; and the need to streamline and modernize our business processes, organizations, and ways of doing business.

Even though the terrorist attack Sept. 11 seemed to relegate Rumsfeld's initiative to a back burner, the Defense Department has worked to meet the Secretary's goals. Both the Army and the Air Force have streamlined their headquarters staffs to create more effective or-

Secretary of the Air Force James G. Roche (right) and Air Force Chief of Staff Gen. John P. Jumper announce a new initiative to transform Headquarters Air Force into a more streamlined and effective organization. The two senior Air Force leaders appeared at a joint briefing with the Secretary and Chief of Staff of the Army at the Pentagon, Dec. 18, 2001. Photo by Air Force Tech Sgt. Jim Varhegyi

ganizations. Navy and Marine Corps leaders are working on similar efforts within their organizations.

Army Secretary Thomas White and Army Vice Chief of Staff Gen. John Keane, along with Air Force Secretary James Roach and Air Force Chief of Staff Gen. John Jumper met with Pentagon reporters Dec. 18 to talk about their Services' reorganization efforts.

White announced that the Army is transforming the tactical and operational side of the Department.

"We are also going to transform the business side of the Department, making decisions faster, [and] with smaller headquarters," he said.

Traditionally, the Army has had a Secretariat and an Army Staff, he noted. Based on his previous experience as an officer on the Army Staff and now in the Secretariat, White said, "in the past, those organizations were not always appropriately aligned.

"We've got to free up people from the headquarters and push them out—and the associated funding—to the warfighters," he said. While the Army in the field has been cut 40 percent over several years, White said, the Secretariat has grown.

"We've put the Secretariat on a diet and refocused," he said.

In a news release, Roche said Rumsfeld "has charged us with the task of working effectively together to execute our joint responsibilities to provide global reconnaissance and strike capabilities for this nation."

The reorganization's goals, he said, are to improve business processes, eliminate unnecessary duplication, and combine appropriate headquarters functions to better support the nation's warfighters.

Noting that the Air Force headquarters has shrunk over the past few years, he said that the Air Force is now organizing "to fit how we really have been operating on a day-to-day basis now for a good six months, and even longer in some cases."

"Our first order of business," Roche said, "is to become more agile, to be able to work faster, have fewer chops, [and have] less bureaucracy."

"We owe it to our people to reduce workload by ending duplicative staffing efforts on the Secretariat and Air Staff," Jumper said in the release. "We are confident this initiative will help us break down barriers, improve communication, and create a more integrated and effective staff.

"To the world outside [Washington]," he added, "this should be a transparent change, but what it will do is improve the way we are organized to train, organize, and equip the world's greatest air and space force.

"For example, the people who plan and program the Air Force budget will be better aligned to have closer relationships with the people who help execute the budget," Jumper said. "This improved contact will result in a better way to do our business."

Editor's Note: This information is in the public domain at *http://www.defenselink.mil/news*.

Marine Corps Working to Equip Warfighters, Remove Roadblocks

Ensuring Simple, Rapid Response to USMC Warfighter Acquisition Requirements

COL. PATRICK J. DULIN, USMC

Why can't the U.S. Marine Corps (USMC) warfighter simply and rapidly register an acquisition requirement and, in turn, receive a simple and rapid response (i.e., less than one year) that the requirement was either initiated or disapproved?

This article addresses the problem of delayed response time and my personal "lesson learned" in alleviating it, based on cumulative experiences over the last 12 years in varied positions. From a warfighter's perspective, this breadth of experience has allowed me to view the problem from company level to Commander in Chief (CINC) headquarters level, while also affording me the perspective of the acquisition professional trying to solve a warfighter's problem.

Registering Requirements

Before proceeding to a full-scale discussion, allow me to bound the scope of the problem. First of all, this problem is most prevalent in the less-than-major ACATs [Acquisition Categories], i.e., ACAT III and IV), and to some extent in the major system category of ACAT II. Second, registration of requirements by the Headquarters level that have been derived from Marine Corps Strategic Plans, Mission Area Analyses, etc., is not at issue.

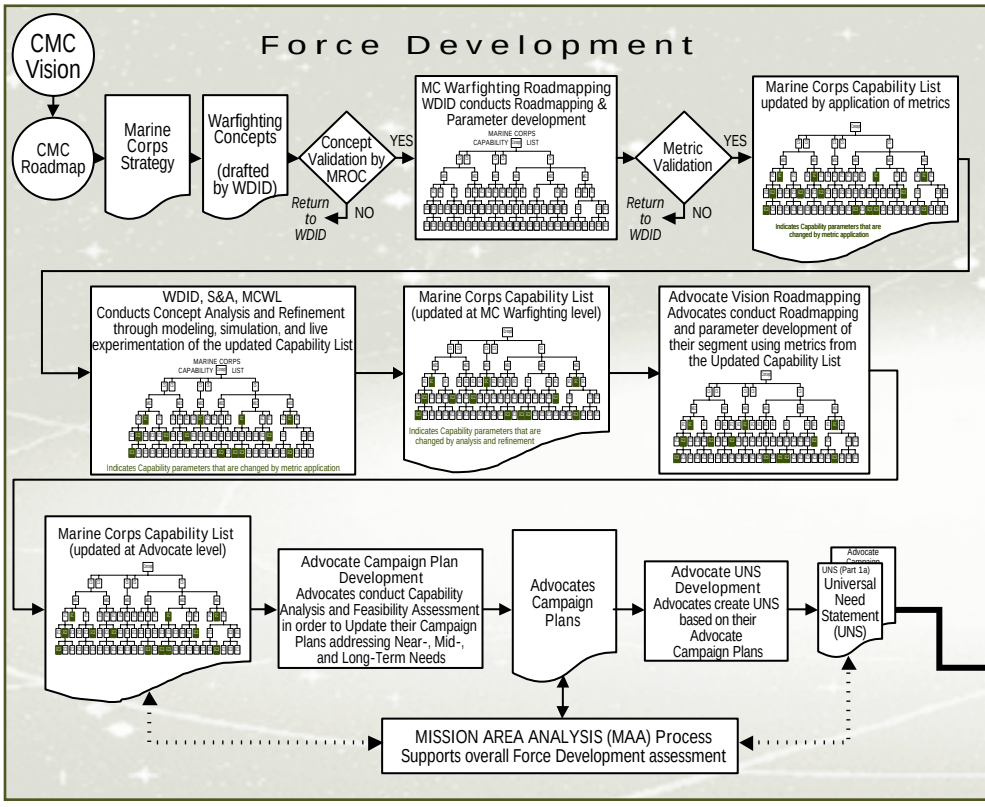
Rather, the difficulty in registration of requirements from the CINC Service Component level and below is the focus of my concern—where command tour lengths of 18-24 months create an expectation that an answer to the request will be forthcoming within a year.

The Reality

Before solution must precede understanding. To understand a problem, we need to comprehend *what* the impact of the problem is and *why* the problem persists. Likewise, for a "lesson learned" to be of enduring worth, it needs to address an enduring problem. The fact that an enduring problem exists does not mean that the solution must be complex, but the problem's very endurance does demand that the solution be complete and consider all stakeholders impacted by both the problem and its solution.

In this case, the impact of the problem is not catastrophic, nor does it render the warfighters ineffective, but it *does* create serious inefficiencies. Specifically, when faced with the frustration over the difficulties of rapidly initiating acquisition programs, the Marine Expeditionary Force (MEF) warfighters have resorted

The Concept-based Requirements Process



Dulin is the Chief of Staff for Marine Corps Systems Command, Marine Corps Base, Quantico, Va.

to meeting their acquisition needs themselves through local purchases without benefit of comprehensive sustainment packages or adequate additional manning. Three salient examples of this situation come to mind:

- I MEF's Non-Lethal Weapons (NLW) program
- II MEF's Riverine Center of Excellence
- I MEF's Mobile Command Post.

In the case of the NLW program, I MEF was responding to the needs of the Somalia peacekeeping operation and procured a variety of NLW items from Commercial Off-the Shelf (COTS) vendors. It took a number of years before the program was initiated Marine Corps-wide, resulting in I MEF meeting CINC needs in the interim through purchases from Operations and Maintenance (O&M) vs. procurement funding.

Similarly, II MEF, in response to CINCSOUTH [Commander in Chief, Allied Forces Southern Europe] requirements for a capability to train South and Central American countries in riverine operations, cobbled together a variety of COTS and Government Off-the-Shelf (GOTS) small boats. Capitalizing on USMC skills, II MEF created a capability "out of hide." In the interim, to equip the Riverine Center of Excellence until the program was formally established, II MEF yet again used O&M funds at hand vs. waiting to budget more procurement dollars in the next POM [Program Objective Memorandum] cycle.

Currently, the I MEF Mobile Command Post is another case in point, where the warfighter, in response to CINCCENT [Commander in Chief, U.S. Central Command] requirements, has purchased COTS vans and configured them with a mix of COTS and GOTS command as well as control equipment to meet tailored theater demands.

In characterizing the situation, we find the MEF-level warfighters rapidly responding to individual CINC's demands with acquisitions in relatively small increments (i.e., ACAT IV), but when applied in aggregate over time and across all MEFs, can reach low ACAT II thresholds. These acquisitions, in turn, are at least initially devoid of any life cycle sustainment support. As a result, they have proven to be effective *immediate* responses to CINC needs, but are inefficient in the *long term*.

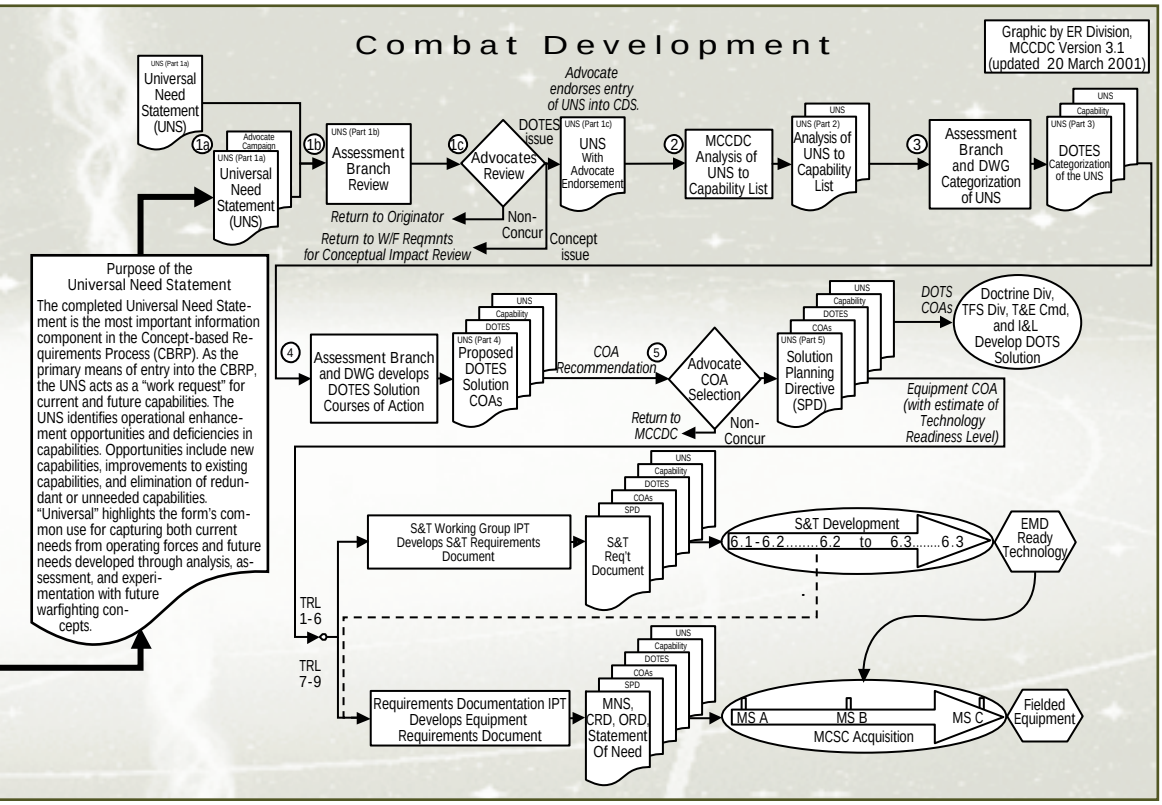
Root Causes

Why does this problem persist? In analyzing the problem, three root causes are readily identifiable:

- First, both ignorance of, and lack of confidence in the current requirements initiation procedures on the part of Marine Corps warfighters prevails.
- Second, the current requirements initiation procedures, codified in Marine Corps Order (MCO) 3900.4D, *Marine Corps Program Initiation and Operational Requirements Documents*, published in 1991, create a process that is, at best, ponderous.
- Third, the growing pace of CINC demands on the warfighters drive local, short-term, band-aid remedies.

Ignorance of, Lack of Confidence in Current Procedures

To understand why there is both ignorance of, and lack of confidence in, the requirements initiation procedures, we need to understand both the past and the current context in which warfighters have experienced the requirements process. At first blush, a simplistic analysis might conclude that the lack of confidence was the result of the drawdown of the Armed Forces in the 1990s. During the drawdown years, it could be argued that it frequently did not matter what requirement initiation procedures were in place due to endemic lack of both Research, Development, Test and Evaluation (RDT&E) and procurement funding. This, however, is not the case. Even during the Reagan boom years of acquisition funding in the 1980s, requirements initiation was problematic. At that time, responsi-



bility for requirements determination rested upon the acquisition executive—then Marine Corps Development Center. This situation did not facilitate linking requirements to evolving doctrine/concepts.

Accordingly, the Marine Corps took a big step forward and repositioned responsibility for requirements determination in the Marine Corps Combat Development Command (MCCDC) to facilitate linkage with the USMC concepts-based requirements philosophy. The 1991 MCO 3900.4D codified this responsibility and went a long way toward ensuring complete requirements determination once MCCDC received the request from the warfighter. However, it did not change the dynamics for the warfighter in terms of the rapidity of initiating requirements.

On the contrary. In the 1990s, as the Defense Reform Act of 1986 kicked into gear, the increased quality of requirements documentation necessary to initiate an acquisition effectively increased MCCDC's workload dramatically. This increase in quality documentation was essential to ensure that programs got off to a coherent start, but it did complicate the issue for warfighters. Simply, it introduced greater lag time for MCCDC to produce the required documentation. Lag time continued to grow, while MCCDC concurrently struggled with falling manpower levels resulting from drawdown of the Armed Forces. Lag time grew even longer as the limited manpower at MCCDC concentrated on higher-priority programs vs. fairly inexpensive ACAT IV-level requests.

While delay at MCCDC elongated, available time (which quality requirements documentation demands) drastically shriveled for the warfighter to expend on increased user liaison with MCCDC, due to a skyrocketing OPSTEMPO [Operations Tempo] in the 1990s. The end result was that despite real qualitative improvements in requirements initiation documentation and synchronization with doctrine, rapidity and simplicity for the warfighter did not improve. Hence, warfighter ignorance of, and lack of confidence in the requirements initiation procedures persisted.

> When faced with the frustration over the difficulties of rapidly initiating acquisition programs, the Marine Expeditionary Force (MEF) warfighters have resorted to meeting their acquisition needs themselves through local purchases without benefit of comprehensive sustainment packages or adequate additional manning.

Requirements Initiation Procedures

This brings us to our second root cause of the basic problem—the current requirements initiation procedures as codified in MCO 3900.4D. As already covered, this order has improved quality through linkage to the concept-based requirements system, but it did not improve the speed of the process. Essentially, a request from a warfighter, normally in the form of a Fleet Operational Need Statement, will be translated into a feasibility estimate and then staffed through MCCDC, Headquarters Marine Corps, and the other principal Marine Corps warfighters' headquarters (i.e., Marine Forces Atlantic, Pacific and Reserve). While thorough but frequently sequential in nature, this process does not promote rapid consensus building or quick issue resolution.

CINC Demands on Warfighters

This lack of consensus is the crux of the third root cause for the problem, which is the growing pace of CINC demands on the warfighters. CINC demands are inherently parochial to the specific theater, and hence do not necessarily apply to all Marine Corps warfighter organizations. Without consensus among warfighters, a requirement is not likely to be validated and initiated, thus frustrating the Marine Corps CINC Service Component trying to comply with a specific CINC's demands. Though the CINCs have recourse to initiate a requirement themselves through the JROC [Joint Requirements Oversight Council] process, the relatively low level (i.e., ACAT III and IV) of the requirements in question mitigate against the overextended CINC staffs ever taking action. This leaves Marine Corps warfighters responding to their CINCs between the proverbial "rock and a hard place," as they are unable to rapidly and simply register their acquisition requirements. And, in turn, they cannot receive a simple and rapid answer (i.e., less than one year) that their requirements were either initiated or disapproved.

What Will It Take?

The Marine Corps is solving this problem as I write through a two-part approach. Part one of the solution addresses improving the rapidity of the basic staffing process to request and initiate an acquisition requirement. Part two of the solution addresses creating a mechanism to expedite consensus building among USMC warfighters regarding evolving requirements.

Improving Rapidity

To improve the rapidity of the basic staffing process, the Marine Corps is

streamlining the procedures set forth in MCO 3900.4D. The chart at the beginning of this article captures the gist of the upcoming revision. In essence, it will provide for a simplified warfighter request in the form of an electronic Universal Need Statement, concurrent staffing, and most importantly, capitalization upon rapid warfighter consensus deriving from establishment of top-level (i.e., 0-8 and 0-9) warfighting advocacy boards. This streamlining is heavily reliant upon the current, maturing Integrated Digital Environment, which was not available when MCO 3900.4D was published in 1991.

Consensus Building Mechanism

Streamlining of the basic staffing process will not be successful, however, without the critical mechanism to expedite warfighter consensus building of advocacy boards. These boards were instituted by the current Commandant of the Marine Corps, Gen. James L. Jones, and comprise a Ground Combat Element board (i.e., USMC Divisions), an Aviation Combat Element board (i.e., USMC Aircraft Wings), a Combat Service Support Element board (i.e., USMC Force Service Support Groups), a Command Element board (i.e., MEF and Marine Force Headquarters), and a Supporting Establishment board (i.e., USMC Bases/Air Stations). The membership of these quarterly boards constitutes the respective warfighting General Officers of the USMC.

Inserting the deliberations of these top-level advocate boards into the streamlined staffing process will provide the rapid and simple validation of an acquisition requirement and, in turn, prompt an equally simple and rapid answer as to whether the requirement was initiated or disapproved. It should be noted that while this solution remedies the prolonged uncertainty a warfighter currently experiences as to whether a requirement will be initiated, it does not remove the inherent tension between CINCs and their Marine warfighters when the theater-specific requirement is not applicable Marine Corps-wide.

Top-Down Approach Should be Emulated

To solve an enduring problem, the basic enduring process/processes generating the problem must be remedied. In this case, that was the lack of a rapid consensus building mechanism for the stakeholders (USMC warfighters) to validate a proposed requirement. The Commandant's top-down approach to create forums for the stakeholders through the advocacy boards should be emulated, ensuring like mechanisms are available at all levels for stakeholders when addressing any problem. Geographic CINCs, in my view, should be authorized limited, discretionary RDT&E and procurement funds to address evolving theater-specific ACAT III- and IV-level requirements, which, in turn, would require changes to current law and regulations.

Need for an Enduring Process

In addressing the problem of prolonged delays in initiating warfighter-generated acquisition requirements, the Marine Corps is creating an enduring process that not only will provide a simple, rapid procedure for the warfighter, but a process that distills and focuses all warfighter requirements into a coherent, synchronized warfighting road map for the future.

Editor's Note: The author welcomes questions or comments on this article. Contact Dulin at *DulinPJ@mcsc.usmc.mil.*

ACQUISITION MANAGERS RECRUITING, HIRING, AND RETENTION HANDBOOK (http://www.dacm.rdaisa.army.mil)

Online Handbook Contains Wealth of Information for Acquisition Managers of Civilian Employees

The way we recruit, hire, promote, pay, and retain employees in the Federal Government is governed by civil service laws, rules, Executive Orders, regulations, and policies to ensure fairness to applicants and employees—usually referred to as merit system principles. The challenge for federal managers and human resources specialists is to work within this complex, rule-based system while still meeting operational staffing and mission requirements.

The *Acquisition Managers Recruiting, Hiring, and Retention Handbook* is a quick reference for use as a first step when considering recruiting, hiring, or retaining employees. It is intended to provide a general understanding of the civilian personnel authorities and vehicles available to meet the staffing needs of acquisition managers. It must be used, however, in conjunction with the support and advice available from servicing personnel offices, who are responsible for advising managers on how the laws, rules, regulations, precedent decisions, and terms of applicable negotiated bargaining agreements apply and what actions can and cannot be taken to accomplish objectives. The handbook summarizes options managers can pursue to meet their staffing needs.

A number of DoD organizations are now participating in the Civilian Acquisition Workforce Personnel Demonstration Project (AcqDemo). Its purpose is to demonstrate that the effectiveness of DoD acquisition can be enhanced by allowing greater managerial control over personnel processes and functions, while expanding the opportunities available to employees by providing a more responsive and flexible personnel system. In addition to the traditional hiring, recruiting, and retention methods discussed in this handbook, the demonstration project adopted initiatives permitting waiver of certain laws and regulations. Many of these initiatives (available to AcqDemo participants only) are identified and discussed in the AcqDemo section of the handbook.

While this handbook is not a substitute for statutory, regulatory, or local requirements or agreements, it will help managers understand not only the barriers and problems, but also what flexibilities may be available within the current system.

AMERICAN FORCES PRESS SERVICE

DoD Uses More "Tools" to Shape Civilian Workforce

SGT. 1ST CLASS KATHLEEN T. RHEM, USA

WASHINGTON, Jan. 17, 2002—DoD is getting "more tools in its toolkit" to properly shape an aging civilian workforce, a senior personnel official said.

Roughly 18,000 employees retired in 2001, and officials estimate 20,000 will take the plunge this year, said Jack Schrader, Deputy Assistant Secretary of Defense for Civilian Personnel policy. He said as many as 24,000 people per year may retire by 2007. Retirements account for roughly half of the personnel attrition DoD deals with in a given year.

"We need to try to shape those losses to make sure that critical employees stay around long enough to transition the knowledge that they have to newer employees that are coming up through the ranks," Schrader said.

He said it's also critical that the Department hire the right people with the right skills into the right jobs. "The focus needs to be on how to manage the attrition and then managing the filling of those vacancies, to make sure we don't do it in a nonfocused way," Schrader said.

To do this, DoD is employing several strategies to boost recruitment.

Statutory changes in recent years allow retired military members to take civil service jobs without having their federal civilian salary being offset for their military retirement pay. Schrader said officials hope this will make civil service a more attractive option for military retirees.

"Retired military are at an age where they have many productive years ahead of them," he said. "They have skills and are trained in a lot of our mission-critical areas."

Civil service human-resource managers have typically relied on a "military model" for recruitment. Schrader said this meant hiring people for entry-level jobs and then "growing" them into higher-level positions within their departments. DoD is now looking to attract individuals in middle- or upper-level private sector jobs.

"Where people have skills that perhaps aren't critical skills any longer, we're putting resources toward training and retraining them into the skill areas we need," he said.

"A lot of times the skills we need are the same skills the private sector is after also," he said. To be a more competitive recruiter, DoD has added perks new employees can qualify for, Schrader said. These include paying off student loans up to $40,000, paying recruitment bonuses up to 25 percent of the first year's salary, and paying for professional credentials.

Government employment traditionally has been considered more stable than private-sector employment. Schrader said this stability attracts a lot of prospective employees.

He also said many young people are attracted by the prospect of serving their country. "We need to remind people that service to the nation is a good cause," he said. "With recent events, I think that that probably is even more of a selling point."

Editor's Note: This information is in the public domain at *http://www.defenselink.mil/news.*

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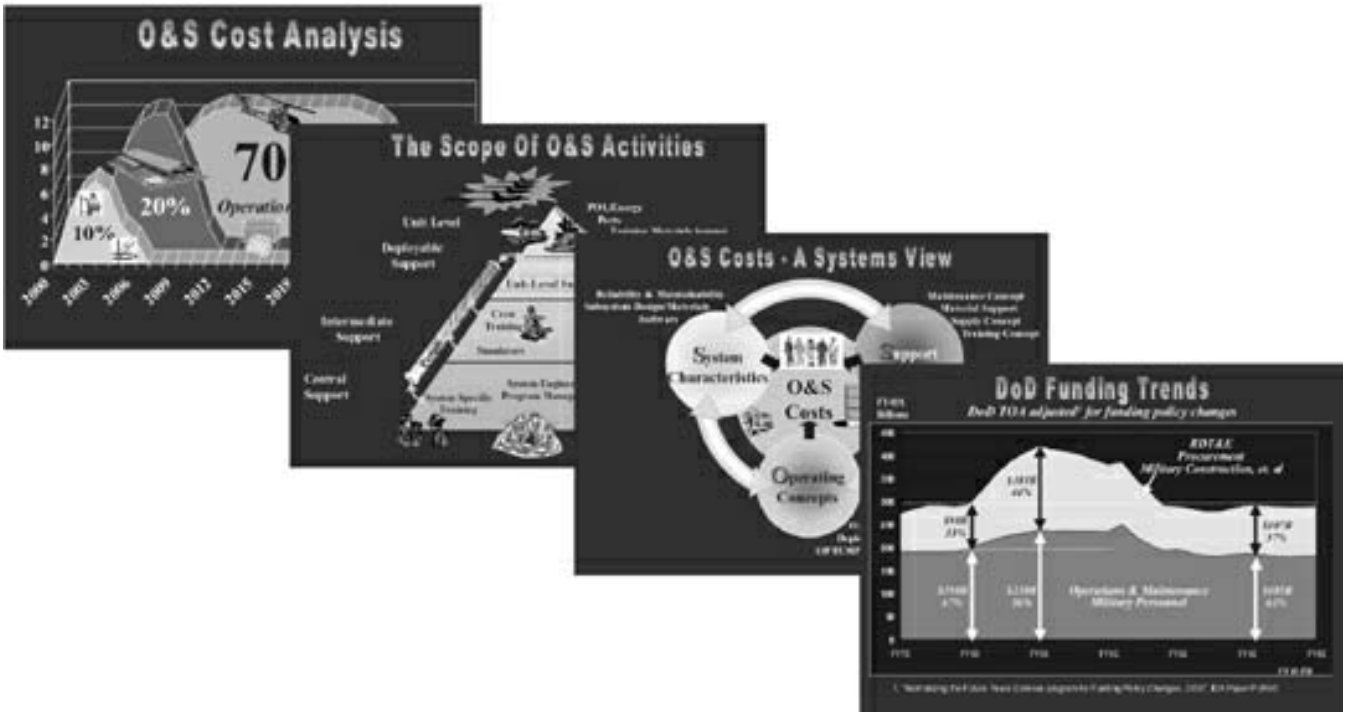

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"You Don't Need to Test COTS Components" and Other Myths

Weighing the T&E Benefits and Risks for Commercial and Nondevelopmental Items

MAJ. HOLLY R. MANGUM, USAF

Imagine yourself as the program manager for a new acquisition. The contractor's proposal includes use of commercial and nondevelopmental items (NDI). Your test engineer is concerned about the implications of incorporating these items into the overall system. Will there be test and evaluation (T&E)? If so, what kind? How extensive should the tests be? Your T&E concerns will need to be incorporated into the applicable acquisition strategy and Test & Evaluation Master Plan (TEMP) documents. Before developing your acquisition strategy though, you must weigh the T&E benefits and risks of using these items. This article highlights some examples of the benefits and risks for T&E considerations, particularly for acquisition strategies that include commercial items and NDI.

By Law

First, understanding what commercial items and NDI *are* is important to understanding *why* we need to consider them in developing our acquisition strategies. From there, we can examine the implications on the T&E community.

The Federal Acquisition Regulation (FAR) Part 2.1 defines a commercial item as:

> "Any item, other than real property, that is of a type customarily used for nongovernmental purposes and that (1) has been sold, leased, or licensed to the general public; or, (2) has been offered for sale, lease, or license to the general public."

The item can be evolved from a commercial item but not yet available for the commercial market. It can also be modified as long as it does "not significantly alter the nongovernmental function or essential physical characteristics of an item or component, or change the purpose of a process."

Mangum is the Commander, 28th Contracting Squadron, Ellsworth Air Force Base, S.D. She is Level III-certified in the Acquisition Corps for Contracting. Mangum holds a B.S. degree in Physics from the University of Washington and an M.A.S. in Aviation Management from Embry-Riddle Aeronautical University. She is a recent graduate of DSMC's Advanced Program Management Course.

A commercial item is NDI, "if the procuring agency determines the item was developed exclusively at private expense and sold in substantial quantities, on a competitive basis, to multiple State and local governments."

Title VIII of the Federal Acquisition Streamlining Act (FASA) of 1994 (Public Law 103-355) implemented the Federal Government's preference for the acquisition of commercial items. According to FAR 12.1, it also established acquisition policies "more closely resembling those of the commercial marketplace…."

Business Environment

In their article entitled, "Solutions: Opportunities and Obstacles," published in the March 2001 issue of *The Edge Perspectives*, J. Clapp, A. King, and A. Taub state that the "commercial sector has reorganized, restructured, and adopted revolutionary new business and management practices in order to ensure its competitive edge in the rapidly changing global marketplace."

DoD, by way of new laws enacted and senior leadership policies in support of acquisition streamlining, has responded to this shift as well. In the 1997 *Report of the Quadrennial Defense Review*, former Secretary of Defense William Cohen stated that DoD must adapt to this new marketplace. This adaptation has represented a major operational and business paradigm shift from a customized, proprietary model to a commercial, open market model. As a result, the T&E community has actively responded to these changes, providing policy, guidance, lessons learned, and best practices to aid in T&E of commercial items and NDI.

Policy

DoD 5000.2-R, *Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs*, updated in June 2001, states that:

> "T&E on commercial and nondevelopmental items shall ensure performance operational effectiveness, and operational suitability for the military application in the military environment, regardless of the manner of procurement. Test planning for these items shall recognize commercial testing and experience, but nonetheless determine the appropriate DT&E [Developmental Test & Evaluation], OT&E [Operational Test & Evaluation], and LFT&E [Live Fire Test & Evaluation] needed to assure effective performance in the intended operational environment."

Misconceptions

When FASA was enacted, the use of commercial items and NDI was expected to result in acquisitions that were significantly faster, better, and cheaper. Since the items were already developed, there really wasn't a reason to conduct further systems engineering or testing. These misconceptions are still there today.

The U.S. Air Force Scientific Advisory Board recently completed a report on the successful implementation of Commercial Items in Air Force Systems. During their interviews, which encompassed 34 programs and organizations, they uncovered a common myth, namely: "You don't need to test COTS [Commercial Off-the-Shelf] components." But as noted in DoD 5000.2R cited earlier, T&E is still required to ensure that the item will perform its intended military application. As the program manager, you might want to consider, when developing your own acquisition strategy, some of the following benefits and risks associated with T&E of commercial items and NDI:

Benefits for T&E of Commercial Items and NDI

- Government need for testing is reduced since commercial market has already accomplished functional testing.
- Government can access commercial market testing results to expedite integration and interoperability testing.
- Government can readily obtain the usage and failure data of products already in use (defects should have already been detected and eliminated).
- Government may observe contractor testing instead of conducting new tests.
- Test articles are readily available to the government since they are already in the commercial market.
- Testing is at black box level (no need for developmental white box testing).
- Upgrades to existing items are tested by the commercial market before release.

Risks for T&E of Commercial Items and NDI

- Complete commercial testing may not have debugged everything (may not work as advertised, and may require further testing).
- According to author A. King in an article entitled, "COTS Commercial Off-the-Shelf, Benefits and Burdens," published in the March 2001 issue of *The Edge Perspectives*, Black box testing only allows government to "make inferences about the product by observing component behavior."
- Authorization and privacy risks (may have embedded "Trojan horse").
- Still need to thoroughly test item to performance specifications as part of the integrated system.
- Legacy system risks. (After numerous upgrades, commercial vendor may decide to no longer support the item and may need to substitute or modify it, which will require further testing.)
- Lack of control over schedule of upgrades means mandatory testing of all interfaces again to ensure they still perform.
- Item may have too many functional capabilities and can interfere with system performance once integrated.
- Reliability tests may not have been enough for military application and may require further testing.
- Evolution of system development means item may not be static, and tests conducted may not be conducted on the exact equipment/systems fielded.
- Planning, Programming, and Budgeting System may hinder planning for T&E funds for shortened acquisition cycles.

- Modifications to items can result in further testing since item has moved from the original tested baseline.
- Environmental testing may not meet all military specifications.
- Safety testing may not be adequate for military application.
- Commercial market may be unwilling to provide description of testing performed.

Counting the Cost

As you can see, the government's policies toward the use of commercial items and NDI have numerous benefits to reduce government testing and save on program cost and schedule. These benefits though, can only be derived after careful consideration of the risks associated with the use of these items. For T&E, that means early involvement in the process, beginning with the initial market research.

During market research, as items are identified as potential candidates, the T&E community can analyze them in the context of the associated risks listed in this article. Questions to ask could include:

- What type of testing has been completed?
- What were the conditions?
- What would be required for integration into the current system?
- How are upgrades tested, and how will this information be obtained?

With this information, the T&E community can adequately prepare an analysis on the benefits and risks associated with the acquisition. They can use this analysis to propose test implications for cost, schedule, and performance risk to the program. The program manager can then use the T&E risks, along with other program risks, to make an informed decision on whether to use commercial items or NDI, and if so, which ones to use.

Since the goal of using commercial items and NDI, as stated in the March 1998 *Test and Evaluation Management Guide*, published by the Defense Systems Management College, is to "reduce acquisition time," it is important that any proposed testing not be redundant and that it be limited to the minimum effort necessary to obtain the required data.

Careful thinking and planning is key. Draft versions of the TEMP should focus on the minimum testing necessary to verify integration and interoperability with other system elements in the operational environment where its use is intended. This type of testing is especially important since the commercial development environment might be significantly different than the military environment—a situation noted in a 1997 DoD Inspector General Report (97-219), "Lessons Learned from Acquisition of Modified Commercial Items and Nondevelopmental Items."

Once the decision is made to use commercial items and NDI in the acquisition, the T&E community needs to provide updated versions of the TEMP, requests for funding, and any life cycle implications to the program manager. Above all, test risks need to be continually evaluated and mitigation plans put into place.

Not a Panacea

Developing acquisition strategies that include commercial items and NDI is not a panacea for not testing the items. As with any acquisition, some associated risks remain. These risks need to be carefully analyzed and mitigated to reap the benefits that the use of commercial items and NDI can produce. Early and continued involvement of the T&E community will ensure that their concerns are heard, accounted for, and acted upon.

As the program manager, you now have tools available to understand the T&E benefits and risks of using commercial items and NDI. Choose wisely.

Editor's Note: The author welcomes questions or comments on this article. Contact Mangum at *holly.mangum@ellsworth.af.mil*.

FROM THE DIRECTOR
Defense Acquisition Regulations (DAR) Council

The controversial "Contractor Responsibility" rule was revoked in Federal Acquisition Circular (FAC) 2001-003, published in the *Federal Register* on Dec. 27, 2001 (see *http://www.arnet.gov/far/facsframe.html*). This rule would have required contracting officers to consider a company's satisfactory compliance with tax, labor and employment, environmental, antitrust, and consumer protection laws before awarding a contract; and would have required contractors to certify whether they violated such laws within the preceding three years. After review of the public comments, the Federal Acquisition Regulatory (FAR) Council, which fully supports the intent of the proposed rule, determined it should be revoked because: 1) a convincing case had not been presented that contracting officers were awarding contracts to other than responsible contractors; and 2) the rule was not justified from a cost-benefit perspective nor did it provide sufficient training or guidelines to prevent arbitrary or otherwise abusive implementation. For questions or further information on revocation of the "Contractor Responsibility" rule, contact Amy Williams in the Defense Procurement DAR Directorate at (703) 602-0288.


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Welcome to a PMO for the 21st Century

Today's PMO Organizational Structure is Destined to Change—*Dramatically*

MAJ. MICHAEL "JOHN" SMITH, USAF

This article reviews issues affecting the future U.S. Air Force acquisition workforce relating to trends in manpower availability, skills required, budgetary constraints, and increasing cooperation between government-industry. Looking forward, it describes my conception of a future system Program Management Office (PMO) operating environment based on the government's core competencies that provide value-added involvement.

Written while a student in the Advanced Program Management Course (APMC) at the Defense Acquisition University, my goal was, and still is to determine the most effective and efficient means to organize a PMO and field the best weapon system performance for our warfighters, while simultaneously reducing cost and schedule.

Finding the "Value-Added"

Since the mid-1980s, DoD has focused on increasing the professionalism of the acquisition workforce. These efforts have included, among other activities, the passage of the Defense Acquisition Workforce Improvement Act; the establishment of the Defense Acquisition University (DAU); expanded training opportunities through the DAU consortium schools; and, since publication of OSD's *Future Acquisition and Technology Workforce* in April 2000, the issuance of a Continuous Learning Policy. Also included in that policy were future acquisition and technology global trends typical of the following:

- Smaller, aging workforce

Smith is a Program Manager, C2 Enterprise Integration System Program Management Office, Hanscom Air Force Base, Mass.

- Core skills still required, but growing emphasis on personnel with understanding of multiple functions and generalists with strong business skills
- Lean budgets driving consolidation, competitive sourcing, and activity-based costing
- Operating in an integrated digital environment
- Seamless government-industry partnerships/teamings.

Currently, the Air Force has only 65 percent mid-senior acquisition personnel available to manage the vast number of weapon system programs. When factoring demographics, the trend further deteriorates. Beginning in 2004, as a result of separations and retirements, program manager career fields are projected to experience cumulative losses ranging from 35 to 50 percent. With the drive to "do more with less," the hard-hitting question (with which the corporate world has already come to grips) must be asked: "What are government program office core competencies, or those skills that cannot be more efficiently and effectively conducted in the private sector; more directly, what "value-added" does a program office provide?

The reader may be surprised at the conclusions, for they challenge the very way in which today's DoD is organized and operates.

Envision a PMO consisting of only three people who comprise the core government team: a program "monitor" who facilitates the contractor's earned value status to OSD and provides a liaison to help warfighters and industry communicate; a contracting officer to manage the contract terms; and a resource manager to provide budget obligation/expenditure information to OSD and provide budgetary submissions for the Planning, Programming, and Budgeting System (PPBS) process.

This team would be geographically dispersed, interfacing internally and also with the contractor via the Internet and videophone capabilities, with minimal face-to-face contact, limited primarily to dealing with classified issues.

We Can't Get There From Here

Prior to conducting research for this article, my feelings toward the future acquisition workforce could be summed up in a brief statement: "We can't get there from here." My research confirmed my beliefs and provided statistical evidence, along with some isolated cases where acquisition managers had already made many sweeping changes by simply asking the question, "What is our [government program office] value-added in this scenario as far as configuration management, logistics, systems engineering, test and evaluation, data management, etc.?"

The answer oftentimes was, other than introducing a lot of risk to the government, there was no real value-added in having a government overseer developing/integrating the functional aspects of a program.

Total System Performance Responsibility

The Air Force took dramatic steps in the mid-1990s, introducing the concept of Total System Performance Responsibility (TSPR), even though the concept has not flushed out very quickly nor is it yet very well understood at the implementation level of the PMOs. Quite understandably, program managers have not yet fully begun to operate outside the normal "overseer with a whip" paradigm drilled into their professional education and training backgrounds prior to TSPR.

Today, program managers who continuously ask the question, "What value do we add to this process?" and are truthful with answering that question, are the ones who are defining/embracing TSPR. The question, admittedly, is difficult to ask because it requires bureaucratic agencies—which often perform best to perpetuate their existence—to question the very *reason* for their existence.

The pervading mentality seems to be, "I'm a government engineer, with an engineering degree … therefore I must go forth and engineer something …."

The reassuring aspects of my research were the confirmation and affirmation of many trends in place or beginning to surface. Of particular relevance was a November 2000 *Crosstalk* magazine interview with Judy Stokely and Terry Little—who previously worked on the Joint Air-to-Surface Standoff Missile (JASSM) program—reflecting on their experiences operating in a lean program office, yet still meeting or ex-

ceeding cost and schedule reduction goals.

According to Stokely and Little, success on the JASSM program was largely attributed to the following three processes:

- Picking contractors *based* on past performance, not processes employed to *get* to that performance.
- Consigning government's role strictly to defining operational requirements, selecting the contractor, and working interfaces that are outside of the contractor's control. No other oversight functions were established.
- Requiring no delineated processes in the contract, resulting in a contract that was, in essence, a performance specification. In other words, "Government doesn't care how the contractor does what they do, as long as they meet the performance requirements … and we [the government] get a 10-year, bumper-to-bumper warranty."

Using What I Learned

Having completed APMC, I arrived at Hanscom AFB to work in the Command and Control (C2) Enterprise Integration PMO. Prior to taking the position, I was informed that Hanscom AFB is currently assessed as "critically" undermanned, with only 50 percent manpower assigned—and absolutely no relief in sight. As I approach my new job and begin to plan/organize, I will seek to optimize those areas in which the government has true competency and value-added.

Government's New Role As Enablers, Catalysts

Even though the government, for the most part, is divesting some risk to contractors via TSPR, there remain many areas, if not all, that the PMO can divest in the form of cross-checking and oversight control. We may keep the traditional functional titles, such as Engineering, Logistics, Test and Evaluation, etc., but the new roles for personnel assigned to a government PMO will change to function more as enablers, or catalysts.

We will determine what broader experience (from other PMOs) the government functional person may have that a contractor would not have, and then let that person share their insight as a daily contributor to the contractor's Integrated Product Teams (IPTs).

The government will assume no control over the functional, allocated, or product baselines—only performance specifications. The contractor, unless proven otherwise, will assume the role of self-oversight and will conduct his or her own verification testing and quality assurance/inspections.

The government/contractor lines will be blurred even further as we make smart business decisions together so that the contractor stays healthy and makes an unregulated profit, and the government receives world-class products and services for a reasonable price and schedule. Unregulated profit will further motivate the existing defense industry players as well as invite other world-class producers who previously shunned DoD's Byzantine system, mainly due to the low, single-digit returns.

We will share our budget/program element/PPBS information so contractors understand the convoluted PPBS process and its twisted rewards for near-sighted planning and execution (obligations/expenditures and OSD's "ramp" management).

I will try to focus our resources not only on those areas over which the contractor has no control (as mentioned with the PPBS), but also in the area of integration—specifically with other platforms the contractor may have inherited, and now must control without benefit of a contractual relationship(s) with the original developers/vendors.

I envision real collaboration in the development of Interface Control Documents (ICDs), where the government input likely will have the most value-added.

Another area to be addressed (primarily targeted at the operational warfighters, but also the contractors) is the topic of spiral development. We will work continuously with the operators to drive home the point that initial performance

New Air Force Assistant Secretary for Acquisition Sworn In

WASHINGTON (AFPN), Jan.4, 2002—Dr. Marvin R. Sambur was sworn in Jan. 4, as the new Assistant Secretary of the Air Force for Acquisition, making him responsible for all Air Force research, development, and acquisition activities. In his new position he provides direction, guidance, and supervision on all matters in the formulation, review, approval, and execution of acquisition plans, policies, and programs for the Air Force.

Before his appointment, Sambur was the President and Chief Executive Officer of ITT Defense in McLean, Va., and has more than 33 years of experience in high-technology program acquisition, management, and engineering, focusing on advanced wireless communications systems, sophisticated satellite payloads, air traffic control systems, and electronic warfare.

Sambur has a B.A. in electrical engineering from City College of New York as well as an M.A. and Ph.D. in Electrical Engineering from the Massachusetts Institute of Technology. He is a recipient of the IEEE [Institute of Electrical and Electronics Engineers] Centennial Award for excellence in engineering management.

Editor's Note: This information is in the public domain at *http://www.af.mil/news.*

may only meet 60 to 80 percent of their mission needs, with additional performance delivered in subsequent block upgrades. This allows for inevitable changes in requirements and technological advances, with less impact to performance, since that performance is to be fielded in the future (and under open system modular design).

Telecommuting

Organizational relationships within the government and between government/industry are dramatically changing, with more changes on the horizon, particularly in the area of telecommuting/virtual PMO concepts.

Many studies conducted on the subject of telecommuting suggest benefits and pitfalls associated with the program. However, I envision a hybrid that offers personnel the benefits of mitigating lost productivity and lost quality family time, but without the pitfalls of being tasked 24/7. For agencies implementing telecommuting for the first time, such pitfalls deserve serious consideration because some managers demonstrate a propensity to think of the telecommuter as a permanent "round the clock" employee, able to respond at a moment's notice, "wired" to the Internet, no longer mired in time-consuming traffic, with no limitations as far as time and distance.

Telecommuting is an issue DoD is only now beginning to address, but which has a major impact on three Air Force primary duty locations conducting acquisition development: Los Angeles, Boston, and Washington D.C.

My PMO is located on the outskirts of Boston, Mass. With a base housing shortage, many program managers and staffs must commute, which requires additional time and distance. This, of course, impacts productivity and morale. In fact, commuting time, combined with related exorbitant real estate prices, is frequently cited by mid-grade acquisition officers as one of the extenuating circumstances for their decision to separate from the Air Force (just as the Air Force is only beginning to benefit from the years and dollar investment in that individual's education and training).

Team-Telework

Author Li Feng, in a University of Strathclyde study entitled, "Team-telework and the New Geographical Flexibility for Workers," advocated the concept of "team-telework" to undertake a large telework project within the European Union's Research and Development in Advanced Communications in Europe (RACE) program.

Instead of the notion of homeworking or telecommuting, team-telework emphasizes the use of multi-media terminals, groupware, and broadband networks to support geographically dispersed workers collaborating together on common tasks—analogous to Air Force PMO activities, which tend to be computer software- and hardware-intensive. Team-telework overcomes flaws in telecommuting by allowing collaboration in a group environment to solve complex problems, while still allowing the participants a sense of involvement in an individual activity.

Unlike telecommuting where the focus is taking people out of their conventional working environment, team-telework is primarily concerned with taking readily available high bandwidth, videophone, and other multi-media capability to workers at their own work sites such that myriad possibilities are at their disposal for solving complex problems.

For example, with IPT teaming arrangements, both government and contractor personnel (operating at individual residences) could be assigned a job. One member can start working on it in groupware software; it then is passed to others via the Internet. Other members can either work on it immediately as a "work-in-progress," or at some point later when convenient to the team member(s).

The result is improved flexibility for the team members in terms of where and when to do the work, i.e., improved spatial and temporal flexibility. With teleworking, personnel can enjoy the benefits of independence in choosing when/where they accomplish the tasks at hand. In short, they are increasing productivity without losing the sense of cohesiveness and group synergy of not being around other team members. Face-to-face interaction is assured by videophone service to all team members, connected via broadband networks, and software allowing collaborative and continuous development along with instantaneous, real-time feedback among team members.

Future Steps

Now more than ever, with DoD's dwindling manpower resources, reduced acquisition budgets, and the increasing need to drive down life cycle costs and development schedules, affordable tools are readily available that can point the way to improved, efficient, effective organizational structures and employee-management relationships that today do not exist.

Editor's Note: The author welcomes questions or comments on this article. Contact Smith at *smith37john@hotmail.com.*

From the Director *Defense Procurement*

Effective Jan. 11, 2002, all Military Department and Defense Contracting Activities shall deviate from the requirements of Federal Acquisition Regulation (FAR) 13.500(d) when using simplified procedures to acquire certain commercial items under $5,000,000. Contracting officers' authority to issue solicitations under FAR 13.5 is extended to Jan. 1, 2003. This class deviation implements Section 823 of the fiscal 2002 Defense Authorization Act. The Class deviation is effective through Jan. 1, 2003, or until the FAR is revised, whichever event occurs first. POC is Angelena Moy, 703-602-1302.

JOIN DAUAA!

ATTENTION

Defense Acquisition University Graduates, Faculty, and Staff!

The name of the Defense Systems Management College Alumni Association—DSMCAA—recently changed to recognize DAU-DSMC organizational realignments and provide for a broader-based, more inclusive membership. The new name is the Defense Acquisition University Alumni Association (DAUAA). The DAUAA Web site URL and e-mail address have also changed:

Web Site: http://www.dauaa.org.
E-mail: dauaa@erols.com.

The process to change the Constitution and By-laws will proceed over the next several months.

If you do not yet belong to DAUAA, take advantage now of the great benefits of membership. As a graduate of any DAU-DSMC course, you are eligible to join a select group of acquisition workforce professionals and receive DAUAA benefits. Your benefits as a DAUAA member, to name a few, include:

- Addition of DAUAA membership to your résumé.
- Continuing involvement in defense acquisition activities and links to other professional organizations.
- Networking with other members of the Defense acquisition community through the Association membership Web site at http://www.dsmcaa.org.
- Timely updates on evolving Defense acquisition policies in Association Newsletters.
- Forum on initiating input to Defense acquisition matters through Newsletter and Symposium papers.
- Continuing Education Units (CEU) for DAUAA Annual Symposium participation—up to 2.5 CEUs—toward meeting DoD continuing education requirements.
- Promoting DAU's reputation as a world-class acquisition learning center, thereby enhancing value of education and training received.

Join this select group of professionals who are proud of their achievements as DAU-DSMC graduates, thankful for the skills and expertise they possess, and ready to make additional contributions to the security and progress of our nation.

Take advantage of this opportunity to help yourself and others. Call (703) 960-6802 to join DAUAA or complete one of the forms (opposite page). Mail it to the address shown. To learn more about DAUAA or register online using a credit card, visit the DAUAA Web site at http://www.dauaa.org.

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The Defense Acquisition University Alumni Association (DAUAA) will hold its 19th Annual Acquisition Symposium, June 17-19, 2002. In keeping with a tradition started last year, the DAU, in partnership with the DAUAA and various corporate sponsors, will also hold the second DAUAA Golf Tournament.

The Golf Tournament and Annual Acquisition Symposium will be held at Fort Belvoir, Va., on the following dates:

June 17
Second Annual DAUAA Golf Tournament: Shotgun Tournament followed by Golf Awards Dinner.

June 18
Registration, General Session, Keynote Address, Industry Displays, Speakers, Reception/Banquet

June 19
Registration, Industry Displays, Workshops, Association Annual Meeting and Luncheon, Panels

To register for this year's event or learn more about planned symposium events, go to **http://www.dauaa.org** on the DAUAA Home Page.

Where Are All the Civilian 'PMs in Waiting'?

Incentivizing the Professional Acquisition Workforce to Aspire to Program/Project/ Product Manager Positions

ARTHUR "ART" SANTO-DONATO

It has been more than 10 years since Congress passed the Defense Acquisition Workforce Improvement Act (DAWIA) to professionalize the DoD Acquisition Workforce. This legislation, dated Nov. 5, 1990, is widely recognized as the foundation of Acquisition Career Management. A "substantial increase in the proportion of civilians…in Program Manager positions…" throughout DoD was one of the major tenets of the Act.

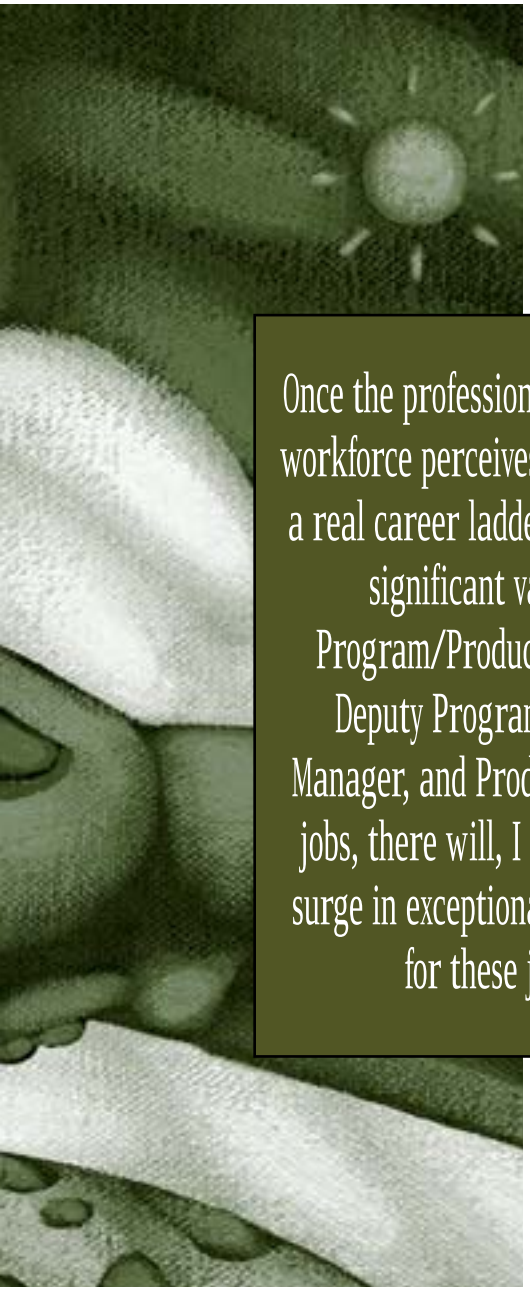
In this article, I will discuss existing barriers, and suggest ways to alleviate them, that will encourage the best civilian acquisition workers to aspire to key management jobs that are the crux of the weapons development business. Many of my suggestions result from my personal review of existing United States Code (U.S.C.) on incentives; interviews with senior acquisition personnel in the field and in academia; and my own experiences over the past 20 years as an acquisition professional. Hopefully, this article will demonstrate convincingly that the process can be improved so that the finest candidates *do* choose to become Product and Project Managers and ultimately, the leaders of our acquisition workforce.

Board Process

Today, all the Services use some type of a Best Qualified process to fill select acquisition positions. Within the Army, a board process to fill key Project and Product Manager billets is open to both military and civilian candidates. Tradi-

Santo-Donato is the Acting Project Manager, Effects and Fires Command and Control Systems, Fort Monmouth, N.J.

tionally, the Project Manager is a colonel or GS-15; the Product Manager is a lieutenant colonel or GS-14. The board process rates candidates from "one to n," regardless of whether they are military or civilian. The Army has tried to develop civilian records similar to the military records to improve this board process. An Army civilian's past work record is now documented in an Acquisition Career Record Brief (ACRB) that is much like the military's Officer Record Brief (ORB). Slating qualified individuals against available positions does not occur in the board process. This is done separately using their order of merit list against the available jobs.



Once the professional acquisition workforce perceives that there is a real career ladder that places significant value on Program/Product Manager, Deputy Program/Project Manager, and Product Manager jobs, there will, I believe, be a surge in exceptional candidates for these jobs.

The Numbers Tell the Story

Boards are chaired by senior military officers and include both senior civilian and military members. Since the history of common boards is quite short (from approximately 1998), it is not easy to ensure statistically relevant trend data. Yet, some glaring numbers still linger from this short history that may be causing the best acquisition civilians to refrain from responding to, and applying for the board announcements. Consider the following data provided by Bruce Dahm, Acquisition Management Branch, U.S. Army Personnel Command [PERSCOM], as of Feb. 21, 2001.

Project Manager Board, Fiscal 2001

As an example, the fiscal 2001 Project Manager Board covered 28 positions, of which 19 were designated "military only" (in accordance with DAWIA guidelines), and nine positions were open to the Best Qualified civilian or military candidates. On the military side, 40 files were considered, with 24 military selected or a 60 percent selection rate. Forty-four civilian files were boarded, with five selected for an 11.3 percent selection rate.

Project Manager Board, Fiscal 2000

Similarly, the fiscal 2000 Project Manager Board covered 33 positions, of which 18 were designated "military only," and 15 positions were open to the Best Qualified candidates. The results were 42 military considered, with 31 selected or a 74 percent selection rate. Thirty-nine civilian files were reviewed, with two selected for a 5 percent selection rate.

Not unexpectedly, these results discourage many of the best civilian candidates from even bothering to submit consideration packages for Project Manager. However, as I will explain later, this is only one of *many* barriers that discourage a significant number of civilians from applying for Board Select PM positions.

Fiscal 2001 Product Manager Board

The fiscal 2001 Product Manager Board looked at requirements for 54 positions, with 28 designated "military only" and 26 for "Best Qualified" candidate, regardless of whether the candidates were civilian or military. Two hundred sixty military officers were considered, with 52 selected for a 20 percent selection rate. Sixty-eight civilian records were considered eligible, with only two selected for a 3 percent selection rate.

Fiscal 2000 Product Manager Board

The fiscal 2000 Product Manager Board was looking to fill 55 positions—30 military and 25 Best Qualified. The results were 238 military considered, with 51 selected or a 21.5 percent selection rate; and 67 civilians considered, with four selected for a 6 percent rate.

Background Diversity Lacking

Again, the few civilians selected do not offer great incentive for others to try. In speaking with representatives from PERSCOM, I learned that backgrounds of many of the civilian candidates were not diverse and usually did not demonstrate leadership experience; rather, their backgrounds tended to depict expertise in certain areas. The boards traditionally rank files with demonstrated strong leadership backgrounds very high. Historically, civilians move up the journeyman level chain by becoming experts in their field and may not get opportunities to develop diverse skills or act in leadership roles until the GS-14 or even GS-15 level jobs.

Filling Other Critical Acquisition Positions

All other Army critical acquisition positions are filled outside the central acquisition process. Senior Executive Service (SES) Acquisition jobs are filled as

Program/Project Manager Next-Assignment Alternatives

1

Upon completion of PM tour, incumbent will proceed to academia for a Ph. D. or Masters Degree in an acquisition-related field. Two to three years will be allowed for completion. If a move is required, PCS or TDY will be provided at the Service or DoD DACM's discretion. After successful completion of the degree, a four-year assignment will follow as an instructor or administrator in a Defense acquisition school such as the Defense Acquisition University, Industrial College of the Armed Forces, the Naval Postgraduate School, or the Air Force Institute of Technology. After this assignment, incumbent will return to the parent PM tour organization and be placed at the organization's discretion into a GS-15 (Level IV) position in the same geographic locality as his or her PM assignment. At any time in the last year at the school, the employee may negotiate a permanent position with the school or any other organization and be free of any further commitment to the Army Acquisition Workforce.

2

Upon completion of PM tour, incumbent will proceed to a Department of Defense acquisition school and work as an instructor for three to five years. PCS or TDY will be at the DoD or Service DACM's discretion. Incumbent will return to the parent PM tour organization and be placed, at the organization's discretion, into a GS-15 (Level IV) position not requiring a geographic move. At any time in the last year at the school, the employee may negotiate a permanent position with the school or any other organization and be free of any further commitment to the Army Acquisition Workforce.

3

Upon completion of PM tour, incumbent will proceed to a position of Assistant PEO for a minimum of three years. This option may or may not require a PCS. Permanent placement after 3 years will be into an equivalent GS-15 (Level IV) position at the parent organization's discretion. This change will not require a change in duty location.

4

Upon completion of PM tour, incumbent will proceed to a developmental assignment at the Director level within the PEO or, if available, a Director-level position within the local major subordinate command. This option requires no mobility to a new geographic location for the incumbent. Permanent placement after three years into an equivalent GS-15 (Level IV) position will be made by the parent organization.

5

Upon completion of PM tour, incumbent will proceed to a Training With Industry assignment for one year at a defense contractor facility. TDY funds will be provided, as necessary. Upon completion, incumbent will be placed in a permanent GS-15 (Level IV) position within last employing organization at that organization's discretion. No mobility required.

6

Upon completion of PM tour, incumbent will proceed to a Sabbatical. Applicable Sabbatical policies and procedures will be followed with the exception of requiring a competition with other candidates. Sabbatical effort must be approved and in place one year prior to the end of a PM tour. Incumbent will supply documentation, as required, for Sabbatical. Upon completion of Sabbatical, incumbent will be placed in a GS-15 (Level IV) position within last employing organization at that organization's discretion. No mobility from the PM tour location required.

7

After two years into PM tour, incumbent has a two-week opportunity to reselect from this list another option at his or her discretion, or agree to an additional two years in his or her existing PM job for a total of six years. Upon completion of the six-year tour, management may exercise its option to place the PM in a GS-15 (Level IV) position of management's choice.

any other SES job in the Army, using regular announcements and the Army or Army Materiel Command SES Offices to manage the selection process.

Deputy Project Manager (DPM) announcements are managed locally through normal civilian personnel merit promotion procedures; other critical acquisition positions (GS-14 and GS-15) are filled either the same way or through central career program referral lists. Therefore, the vast majority of critical jobs are filled by traditional means, with many careerists harboring the perception that selections are still tied to the "good old boy" networks (i.e., technical qualifications tailored for a specific person's background), and not necessarily given to the Best Qualified candidate. Although this is almost always *not* the case, this perception is still quite prevalent within the workforce.

In March 2001, the Logistics Management Institute (LMI) published *Baseline Study: Implementation of the Defense Acquisition Workforce Improvement Act (DAWIA),* an Office of the Secretary of Defense (OSD)-sponsored study prepared for the DoD Director of Acquisition Education, Training and Career Development. In a section of that study entitled, "Selection Processes for Key Positions, Including Civilian Consideration," LMI reported that the Air Force has established a Material Management Board (SES and general officers) that meets yearly to select "Best Qualified military and civilian candidates for its key acquisition leadership positions."

Likewise, the Navy has created "a senior board jointly chaired by the Navy Acquisition Executive and the Vice Chief of Naval Operations. It uses a Best Qualified policy to select PEOs (Program Executive Officers), DPEOs (Deputy Program Executive Officers), Acquisition Category (ACAT) I/II PMs/DPMs (Program Managers/Deputy Program Managers)."

Within the Army, their centralized Best Qualified policy is restricted to mainly ACAT I PMs and Product Managers and does not include PEOs, DPEOs, or

DPMs. Therefore, the Army's Director of Acquisition Career Management does not have a great deal of influence over the majority of many other important critical acquisition positions.

DoDD 5000.52, Defense Acquisition Education, Training, and Career Development Program, paragraph 4.9, states:

"Each Acquisition Corps shall have a centralized referral system for the selection of Acquisition Corps members to fill critical acquisition positions…"

To date, each Service is working to this end, but none is yet there. Although the proportion of civilians in key critical acquisition jobs has increased, concern remains among those running the board process that the Best Qualified civilians are not necessarily trying for the Board Select Project and Product Manager positions.

Barriers—and There Are Many

Since the passage of DAWIA, DoD has undergone a significant reduction in the size of the entire Department workforce, especially in the acquisition workforce, without any commensurate reduction in the acquisition workload. Today, the acquisition workforce is asked to do more with less—and do it significantly better.

Disproportionate Reduction of the Acquisition Workforce

In the February 2001 issue of *Government Executive*, George Cahlink wrote a column on "The Defense Department's Debilitating Loss of Critical Workers," stating that "since 1989 … Defense cut the civilian acquisition workforce by half from a peak of 310,000 workers in 1989 to about 150,000 today. By 2005, the workforce would be halved again with the expected wave of retirement."

Cahlink cites comments from Don Mancuso, the Defense Department's Acting Inspector General [at this writing].

"If the workload had been reduced proportionally," says Mancuso, "eliminating half of the acquisition positions could be regarded as positive achievement. Unfortunately, this has not been the case."

> Acquisition professionals are quite astute at sizing up how former Project and Product Managers who–through no fault of their own–suffer cost, schedule, and performance problems (due to the high risk in their programs) that can be caused by program funding cuts or contract protests that were outside of their control window. Why take on the high risk?

Mancuso, Cahlink goes on to say, has testified before the Senate Armed Services Committee, and in a March 2001 IG Report, Mancuso specifically mentions difficulty in retaining personnel.

Cahlink also points out well-known common occurrences where "acquisition workers are being asked to move beyond narrow technical jobs and instead, perform their duties with an eye toward accomplishing their organization's overall mission."

Advancement Halted

Cahlink's *Government Executive* article also references remarks by Keith Charles, former Director, Acquisition, Technology and Logistics Workforce Management, who said that in most acquisition organizations the top jobs go to the military, and many civilians leave government because they see their advancement halted. (Charles' remarks were made in a presentation to contracting and program management students at the Naval Postgraduate School, Monterey, Calif., on Feb. 22, 2001.)

Charles also expressed the view (with which Cahlink agrees) that the military are trained for these jobs with career-broadening assignments, whereas when a civilian receives a career-broadening work experience—it's usually a fluke, not a plan.

Need for a Plan

Why is there no plan? What is it in the system that prevents civilians from attaining diverse backgrounds and from choosing to compete for Product and Project Manager positions? Note that such a plan for civilians, however, is called for in the 912 (c) Working Group's Final Report, "Future Acquisition and Technology Workforce," written in support of the initiatives described in OSD's April 1998 and April 2000 Reports to Congress.

Veering "Off-Track" Career-Wise

Culturally, in the civilian world we build a career in an area that usually equates to existing career programs. In the Executive Summary of the Section 912 (c) Working Group's Final Report, the need for developing civilian generalists to become Program Managers is listed as a necessary requirement. Indeed, the Working Group's Final Report lists institutionalizing a centralized career management program as an *action* item.

Today, our business people grow in the traditional Comptroller career field with a career ladder that culminates with a position as Director of Resource Management (DRM). Yet, all PM offices have business managers who are comptroller careerists, and those careerists know they are no longer on the rung of a career ladder that leads to a DRM position.

They are now part of the acquisition workforce with their "narrow" business expertise and, regrettably, have probably "maxed out" their career promotion potential. If lucky, they may aspire to

Deputy Program/Project Manager Next-Assignment Alternatives

1

Upon completion of DPM tour, incumbent will proceed to academia for a Ph.D. or Master's Degree in an acquisition-related field. Two to three years will be allowed for completion. If a move is required, PCS or TDY will be authorized at the DoD or Service DACM's discretion. After successful completion of the degree, a four-year assignment will follow as an instructor or administrator in a Defense acquisition school such as the Defense Acquisition University, Industrial College of the Armed Forces, Naval Postgraduate School, or Air Force Institute of Technology. After this assignment, incumbent will return to the parent DPM tour organization and be placed at the organization's discretion into a GS-15 (Level IV) position in the same geographic locality as his or her DPM assignment. At any time in the last year at the school, the employee may negotiate a permanent position with the school or any other organization and be free of any further commitment to the Army Acquisition Workforce.

2

Upon completion of DPM tour, incumbent will proceed to a Department of Defense acquisition-affiliated school and work as an instructor for three to five years. PCS or TDY will be authorized at the DoD or Service DACM's discretion. Incumbent will return to the parent PM tour organization and be placed at the organization's discretion into a GS-15 (Level IV) position not requiring a geographic move. At any time in the last year at the school, the employee may negotiate a permanent position with the school or any other organization and be free of any further commitment to the Army Acquisition Workforce.

3

Upon completion of DPM tour, incumbent will proceed to a developmental assignment at the Director level within the PEO or, if available, a Director-level position within the local major subordinate command. This option requires no mobility to a new geographic location for the incumbent. Permanent placement after three years into an equivalent GS-15 (Level IV) position will be made by the parent organization.

4

Upon completion of DPM tour, incumbent will proceed to a Training With Industry assignment for one year at a defense contractor facility. TDY funds will be provided, as necessary. Upon completion, incumbent will be placed in a GS-15 (Level IV) position within last employing organization or into a position at that organization's discretion. No mobility required.

5

Upon completion of DPM tour, incumbent will proceed to a Sabbatical. Applicable Sabbatical policies and procedures will be followed with the exception of requiring a competition with other candidates. Sabbatical effort must be approved and in place one year prior to the end of a PM tour. Incumbent will supply documentation, as required, for a Sabbatical. Upon completion of Sabbatical, incumbent will be placed in a GS-15 (Level IV) position within last employing organization at that organization's discretion. No mobility from the DPM tour location required.

6

After two years into a DPM tour, incumbent has a two-week opportunity to reselect from this list another option at his or her discretion, or agree to an additional two years for a total of six years. Upon completion of the six-year tour, management may exercise its option to place the incumbent in a GS-15 (Level IV) position of management's choice.

the position of Deputy PM in their local PM shop. (Because it is a local recruit, and if the PM likes what they have accomplished as business managers, they may be selected as Deputy PMs through local merit promotion procedures.) The chance to ever reach SES, however, is almost non-existent.

Since they are no longer in the DRM chain and their backgrounds are neither diverse nor technical, they are no longer competitive in their career fields. In reality, they are precluded from being selected for an acquisition SES position that will be filled through the "good old boy" network rather than through centralized acquisition community channels where past work experience would have very high value. They are also witnesses to a selection process for civilian PEO and DPEO SES jobs that does not seem to follow a career ladder from a PM and DPM position.

Similar career tracks beget the logistician and the engineer who move into the Project Manager office environment. What has evolved is a cultural barrier that seems to tell civilians that they do not have the diverse backgrounds needed to become PMs; consequently, they believe that there is no road to SES. The top acquisition folks perceive that a tour as PM or Product Manager will not aid them in progression to SES—so why bother? They may as well stay in their traditional fields where the pay and benefits are the same as Board Select positions.

TDY

Our critical acquisition personnel working in PM shops realize that most Project and Product Managers spend over 75 percent of their PM tours traveling to Temporary Duty (TDY) sites. Most civilians are unwilling to take jobs that take them away from their families so often.

Multiple Reporting Levels

Further, they realize that PMs must answer to more than one chief. Typically, PMs must meet all the demands of Pentagon-level general officers, plus all the demands from general officers that sur-

face from the user end of the acquisition business. This is unlike regular civilian jobs where success requires only that they satisfy their immediate supervisors.

Compensation Inequities

In addition, these civilian PMs/Product Managers do not receive any more compensation than they would in other GS-14/15 positions. Prior to the beginning of the five-year trial period for the DoD Civilian Acquisition Workforce Personnel Demonstration Project in 1999, which created a Pay Band that includes GS-14s and GS-15s, most PMs and division chiefs were GS-14 or GS-15. The deputy PM and technical management chief were usually GS-15s. Now, under Pay Band Level IV all these jobs are equal, and the incumbents can receive compensation ranging from $67,675 to $103,623—plus locality pay.

For example, in the Washington D.C. area, the range—including locality pay—is $78,265-$119,682. Since Product and Project Managers are typically GS-14s and GS-15s respectively, both fall under Pay Band Level IV. Therefore, all the division chiefs and deputies would not receive any promotion to move to either PM or Product Manager positions. To be promoted, one must move from Pay Band Level III, and acquisition workers at this level are usually not the seasoned acquisition veterans to be found in other critical acquisition positions. Hence, a side effect of Pay Banding was to remove many seasoned GS-14s from bidding on GS-15 PM jobs since a promotion is no longer associated with the increased responsibilities.

Location, Location, Location

Another barrier that precludes some civilians from applying is the remote chance that they would be selected for a position at a different location. To try to alleviate this concern, the Army instituted a regional area of consideration. For example, if you work at Picatinny Arsenal, you are in the Northeast Region; therefore, not only can you apply to the open board announcement, but you can also narrow the area in which you are willing to accept a Board Select position within the Northeast Region. However, you still may have to move. If you apply from the Picatinny area, you may be selected for a position at Fort Monmouth, which may turn out to be 100 miles away from your residence but is still in the Northeast Region. For this reason, some candidates opt not to apply.

No Control Over Next Job

Civilians elect to not pursue Board Select positions for many reasons. They realize that, in most cases, these board jobs are for four years, or they may last until the next nearest major milestone in their program's life cycle is completed. This means that they will not have any control over their next job or where it might be located. Civilians are not accustomed to having such little control over their future positions or locality.

No Longer in Charge

Candidates for PM positions do not know if following a PM position will bring the same level of job satisfaction as their previous employment. For example, would an individual who was the undisputed boss move to a deputy or division chief position after being the man in charge? Unlike the military, high-level civilian positions are not constantly rotating, and finding challenging, career-enhancing jobs after being a PM may prove difficult. And finding a suitable position located where the incumbent desires to reside significantly adds to the challenge.

High-Risk

These unknowns, along with the many other barriers discussed in this article, make the decision not to apply fairly easy for sharp acquisition workers. They are content to remain in their career field tracks where they are recognized experts, and by continuing their traditionally exceptional efforts in their fields of expertise, are fairly certain they will be well rewarded in pay and bonuses under the pay demo.

Why take on the high-risk job of Project Manager or Product Manager and jeopardize the rewards that can be expected for known results in their traditional work areas? As a body, they are quite astute at sizing up how former Project and Product Managers who—through no fault of their own—suffer cost, schedule, and performance problems (due to the high risk in their programs) that can be caused by program funding cuts or contract protests that were outside of their control window.

Lack of Substantive Bonuses to Reward Risktaking

Further, members of the civilian acquisition workforce have witnessed for themselves that the bonuses to successful Project and Product Managers are fairly indistinguishable from those they are already receiving; even more troubling, the not-so-successful PMs and Product Managers are way below what they normally receive. Clearly, if civilians do "screw up" in these Board Select positions with their high visibility, their advancement is over, their bonuses gone or curtailed, and their careers forever blemished.

As a system, we do not reward risktaking gone bad, even though the most successful people in private industry usually fail a few, or even many times before success. A few mistakes in a Board Select job may be remembered by pay panels, future SES selection panels, and by general officers for years to come.

It All Adds Up

Knowing that no increase in pay accompanies these difficult jobs, no guaranteed bonus, unknown follow-on jobs, and little chance that such jobs will lead to SES appointments—all of these factors make it readily apparent why so few of the eligible acquisition professionals try for these positions. Unlike a military PM, who in almost every case will be retirement-eligible after a tour as a Project Manager, the civilian PM will probably still have eight to 10 years of work before he or she is retirement-eligible.

Is it therefore impossible to attract the best civilians to these jobs? Can we not fulfill the intent of DAWIA to increase the proportion of civilians in Program Manager positions?

Incentivizing Civilians

In spite of all the existing barriers that inhibit many civilians from seeking the Project and Product Manager positions, these jobs are the lifeblood of successful future Army—and all of DoD—weapon system acquisition; and it behooves the acquisition community to change the existing civilian mindset that sees little reason to compete for these jobs.

Centralized Board Referral System

First and foremost, we need to develop a centralized board referral system for all acquisition SES positions such as PEO, DPEO, and RDEC (Research, Development and Engineering Center) Directors. There must be in place a clear career progression that includes either or both Project and Product Manager positions. The DoD DACM and PERSCOM need to have control over the critical acquisition SES jobs, and they should not continue to fill positions under the traditional Army/Army Materiel Command SES hiring process. Also, the DPM positions for major programs should be Board Select and considered to be equal to a PM for purposes of career progression.

Annual Boards for SES Positions

A system of annual boards for SES positions needs to be established. All eligible acquisition professionals interested in SES positions could submit the Office of Personnel Management (OPM) SES Managerial Qualifications. Other critical acquisition professionals chosen by the DoD DACM or the Deputy DACM must man these boards. For those already in critical acquisition positions, there should be no need for further Technical Qualifications—their past records should suffice. If they are managerially qualified for SES, their profession should be enough to satisfy any additional special technical qualifications. Job diversity and special skills would be considered by the board in developing their "1 to n" list.

Once their managerial skills have been evaluated and approved by OPM, they should not have to rewrite them every year. Similar efforts already exist in other agencies. Outside candidates can submit annually to the board for consideration. This would improve the system we have now, where after candidates are selected, they get to rewrite their managerial qualifications to ensure they meet OPM standards. We would have a pool of qualified acquisition professionals ready to serve in the senior acquisition billets.

Pay Band Distinction

Next, we need to develop ways to distinguish a Project Manager and Product Manager from the array of other Pay Band Level IV and GS-14/GS-15 critical acquisition jobs. Doing so requires looking at the way we compensate individuals. Selection to Project Manager and Product Manager positions should nearly always be considered promotions.

Anyone moving from a position in Pay Band Level IV to a PM should receive a 6 percent pay increase; if that person is already at the maximum level in the band, he or she should get an annual bonus at the start of each year equating to 6 percent of the Pay Band maximum.

If moving from a GS-14 to a GS-15 PM position or Level IV PM position, he or she should get an additional 6 percent above the normal promotion amount. If close to the top, an increase and bonus equating to 6 percent should be set. Likewise, a PM moving from Level III to a Level IV PM position should receive the standard 6 percent, plus an additional 6 percent for accepting the Board Select PM position. This additional 6 percent stipend would disappear after completion of their tours if they did not accept another PM assignment. However, if they are promoted to SES, their PM salary should be the point of demarcation for establishing the SES promotion salary.

After the PM/DPM Tour

After completion of a tour as PM or DPM of a major acquisition program, these professionals should be considered to have fulfilled all the OPM Managerial Qualifications, and should be required to submit only the very minimum amount of paperwork to the SES Annual Board. The board and the DoD DACM staff should ensure the OPM Qualifications Statements are in the proper formats acceptable to OPM.

Currently, this review by the board and DoD DACM staff is conducted only for the person selected to fill the open SES position, *after* the recruitment and interview process. This would remove a practice that appears unfair to almost all those who apply for Army SES jobs and are not selected. Many applicants walk away from the process with the distinct perception that only the job-specific Technical Qualifications matter; and that after candidates are chosen, the system lets them rewrite their OPM Managerial Qualifications. The candidates' rewritten Managerial Qualifications are then reviewed by people in the Army SES offices until they are rewritten in a manner deemed capable of meeting OPM standards. This board system will make the managerial skills and leadership skills the most important, and the ACRBs and resumes will show the technical skills of the acquisition professional candidates.

Retention/Recruitment Bonuses

Current policies on retention and recruitment bonuses are available, but they are not used frequently and are not always applicable, especially when the positions are coming from a board that can slate military or civilians into these positions. Recruitment bonuses usually are used to bring in someone from outside the government, and retention bonuses are used when civilians have a bona fide offer from private industry. Clearly needed is a family of incentives that are readily available, well known, and used to market interest in Board Select jobs.

Once the professional acquisition workforce perceives, as covered earlier in this article, that there is a real career ladder that places significant value on Project/Deputy Project and Product Managers, there will, I believe, be a surge in exceptional candidates for these jobs. However, the barriers of not knowing what job will come after a Board Select tour and not knowing if mobility will be required for that next job, must also be addressed.

Leeway In Next Assignment

As part of the PM Board process for civilians, there should be included a step that lays out what assignment that person will have upon completion of his or her PM tour. Three sidebars in this article list my proposals for next-assignment possible job alternatives for the positions of Program/Project Manager (p. 70), Deputy Program/Project Manager (p. 72), and Product Manager (shown below). These should be posted to the Army Acquisition Workforce and PERSCOM Web sites as part of the application process.

The application instructions should include the applicable options (as spelled out in the three sidebars), and state that the candidates must elect one of the options; that at the start of the third year they will get one opportunity to affirm their choice or change to one of the other options; and that this choice will be final so that the system has two years to accommodate that option.

Risktaking Deserves Compensation

After establishing a valued career progression, salary incentives, and recognition that these positions are considered promotions—even though grade and Demonstration Pay Band levels might remain the same—DoD still needs to incentivize and recognize the inherent risk in these positions.

I propose that an Annual Performance Bonus or CCAS (Contribution-Based Compensation Appraisal System) bonus floor be established. For each year incumbents occupy these Board Select positions, I suggest that the starting bonus for a PM should be $6000, for a DPM $4000, and for the Product Manager $2000. Again, these are floors and, depending on success, can rise to the limits of the existing bonus system each year.

Human Capital Management

Today, throughout government we keep hearing of the need to address Human Capital Management issues. Congress has also asked agencies to develop human capital strategies in light of the impending huge numbers of retirement-eligible civilians. They want agencies to have formal plans on how they will meet future personnel needs.

A 2001 General Accounting Office Report (GAO-01-326), entitled "Managing for Results: Human Capital Management Discussions in Fiscal Year 2001 Performance Plans," stated that "Some agencies identified … unique human capital challenges … but they did not include specific strategies or goals for resolving those challenges." Senior acquisition officials need to formalize a strategy to ensure that the best civilians compete for, and successfully attain positions as Project and Product Managers.

Senior Leadership Involvement

This issue requires significant involvement of DoD's senior leadership or we will continue to have an acquisition workforce that does not recognize PM and Product Manager positions as key to a successful career. We need to address the barriers and, where possible, remove them. More importantly, we need to establish *incentives* where some of the inherent barriers in these jobs—such as high risk, travel, and serving many masters—are ameliorated by attractive incentives and opportunities for career advancement. In this way, we can ensure DoD gets the best candidates vying for the strategic positions as weapon system managers that are the key to successful products in the hands of our military.

Also, we will ensure a career path that will bring DoD's future acquisition leaders to the highest standards possible. Through a centralized referral system that includes not only Project Managers and Product Managers, but also Deputy PMs, Deputy PEOs, PEOs, and all critical acquisition SES positions, we can achieve this goal. Also, by introducing follow-on assignment choices and bonus floors on training opportunities, we can stimulate civilian interest in aspiring to be Project and Product Managers.

Editor's Note: Santo-Donato welcomes questions or comments on this article. Contact him at *as-donato@c3smail.monmouth.army.mil*.

Product Manager Next-Assignment Alternatives

1

Upon completion of Product Manager tour, incumbent will proceed to academia for a Master's Degree in an acquisition-related field. Up to 18 months will be allowed for completion. If a move is required, PCS or TDY will be authorized at the DoD or Service DACM's discretion. After completion of the degree, employee will return to parent organization and be placed into a GS-14 (Level IV) position at organization's discretion.

2

Upon completion of Product Manager tour, incumbent will proceed to a Training With Industry assignment for one year at a defense contractor facility. TDY funds will be authorized by the DoD or Service DACM, as necessary. Upon completion, incumbent will be placed in a GS-14 (Level IV) position within last employing organization or into a position at that organization's discretion. No mobility required.

3

Upon completion of Product Manager tour, incumbent will proceed to a Sabbatical. Applicable Sabbatical policies and procedures will be followed with the exception of requiring a competition with other candidates. Sabbatical effort must be approved and in place one year prior to end of PM tour. Incumbent will supply documentation, as required, for Sabbatical. Upon completion of Sabbatical, incumbent will be placed in a GS-14 (Level IV) position within last employing organization at that organization's discretion. No mobility from the product manager tour location required.

4

Incumbent will be placed in a supervisory GS-14 (Level IV) position by the Product Manager employee's organization that does not require a geographic move.

Edwards Civilian Recognized Nationally for Test Work

LEIGH ANNE BIERSTINE

EDWARDS AIR FORCE BASE, Calif. (AFPN), Feb. 2, 2002—Aiding in the development of one of the Air Force's premier weapons systems is job satisfaction enough for most people. But Kevin Montoya's work on the airborne laser test and evaluation program at the Air Force Flight Test Center here is earning him high marks on a national level.

The National Defense Industrial Association has named Montoya Civilian Tester of the Year.

Montoya is the project manager for test and evaluation of the airborne laser program. He was cited for his work in developing directed-energy and high-energy laser test infrastructure and capability where none has previously existed. Montoya and the airborne laser integrated test force here recently completed a 17,000-square-foot systems integration laboratory where the laser will be tested in [its] entirety on the ground prior to flight-testing.

There is no doubt the importance of the airborne laser program helped catch the attention of the association, Montoya said.

"The ABL program is a priority for the nation," he said. "It is a breakthrough weapons system, and if it proves successful it will change the way we do things in the future."

Montoya's work is providing a model for future flight-test center directed-energy test programs, said Col. Steve Cameron, the 412th Test Wing commander here.

"We are all proud that the NDIA has recognized Kevin's unique contributions to the test community," Cameron said. "It's nice to see national recognition for the hard work that goes on behind the scenes to make the test and evaluation of our nation's aerospace systems the best anywhere."

Kevin Montoya (right), project manager for test and evaluation of the airborne laser program at Edwards Air Force Base, Calif., and Chris Roder, facility supervisor for Wyle Labs, review plans for the laser's ground pressure recovery assembly, which is under construction at Edwards. Montoya was recently recognized for his work on the airborne laser with a national award.

Photo by Dawn Waldman

The NDIA nod is recognition not only for his own hard work, Montoya said, but also for the role the flight test center plays in supporting the nation's defense.

"This award is a tribute to the test expertise we have here at Edwards," Montoya said. "Hopefully this will be the beginning of further recognition by the Air Force and the rest of the test community."

Editor's Note: This information is in the public domain at *http://www.af.mil/news*.

Fourteenth Annual International Acquisition/Procurement Seminar — Atlantic (IAPS-A)

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The Fourteenth Annual Acquisition/ Procurement Seminar—Atlantic (IAPS-A) will be a theme-based format, to include an industry day; will provide for your individual participation; and will provide for positive information exchange and feedback. The theme for this year's seminar is "Case Based Education in the Defense Acquisition Environment."

The seminar is sponsored by the International Defense Educational Arrangement (IDEA), which consists of the defense acquisition educational institutions in France, the United States, the United Kingdom, and Germany.

Those eligible to attend are Ministries, Departments of Defense, and supporting Defense Industries from the four IDEA nations who are actively engaged in international defense acquisition programs.

This year's seminar will be held July 8-12, 2002, in Paris, France. The last day of the seminar, July 12, will be dedicated to the educational aspects of international acquisition.

The IAPS-A is by invitation only. Those desiring an invitation who have not attended past international seminars should submit a letter of request, on government or business letterhead, to DSMC by fax (703-805-3175).

To register, visit the seminar Internet Web site at http://www.dsmc.dau.mil/international/international.htm.

Invitations, confirmations, and administrative instructions will be issued after May 1, 2002.

Contact an IDEA Team member for additional seminar information at:

Comm (U.S.):
(703) 805-5196

E-mail:
internationalseminars@dau.mil.

Increasing Combat Effectiveness Through Interoperability

Information Interoperability—The Key to Information Superiority

PHUONG TRAN • GORDON DOUGLAS

Information Superiority—a powerful tool for the warfighter in the international battlespace of today ... and one of the greatest challenges facing the test and evaluation community. Information interoperability is arguably the key ingredient of information superiority.

Consequences of Not Sharing Information

Every time the wrong helicopter is shot down or the wrong target is bombed critics say, "They should have known." In some cases the critics are right. Some people did know, but the right information did not get to the right people at the right time. That often happens when systems do not exchange information efficiently and effectively and are not interoperable across Service, Agency, or even National boundaries.

The Chairman of the Joint Chiefs of Staff has attacked this problem directly with a joint interoperability test certification process that applies to every Department of Defense National Security System (NSS) and Information Technology (IT) system. Systems that have interoperability integrated into their development and testing plans have a shorter, smoother path to deployment and provide the best support to the warfighter. Programs where interoperability issues have been sidestepped may later suffer delays, cost overruns, or worst of all, contribute to deadly mistakes.

The Joint Interoperability Test Command helps to ensure continuing effective interoperability by participating in joint exercises and real contingencies. Results from these events confirm a system's interoperability status, or trigger a reassessment if serious anomalies are uncovered.

Program managers need to understand the interoperability testing and evaluation process and use it to their advantage. To understand the process, a few basic questions need to be answered.

Q

What is information interoperability?

A

Simply put, information interoperability is systems working effectively together. Joint Publication (JP) 1-02, *DoD Dictionary of Military and Associated Terms,* dated March 23, 1994, uses a slightly more elaborate definition:

"The ability of systems to provide services to and accept services from other systems, and to use the services exchanged to enable them to operate effectively together."

Q

How interoperable must a system be?

A

For years, this has always been a challenging question to answer. The interoperability status of systems, especially families or systems of systems, cannot be simply dichotomized into "yes, it works" or "no, it doesn't." Commercial

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software, whether used directly in systems or in the tools used to develop custom systems, is ubiquitous. Unfortunately, the complexity of this software guarantees that any moderately large system will never be error free.

Interoperability evaluation acknowledges this situation by factoring in the criticality of requirements (i.e., will failure to meet a requirement affect critical mission functions?) and by assessing the severity of any deficiencies. The expected operational impact of anomalies is categorized as minor, moderate, or major—major being sufficiently severe to preclude certification of the capability or to justify de-certification of a previously certified requirement.

The operational environment is dynamic in ways beyond the flexibility of tactical networks. Individual system components are upgraded—frequently with hardware, constantly with software. Anyone with a personal computer, who has tried to maintain current versions of operating systems, applications, virus definition files, etc., is painfully aware of the implications of this situation.

With few exceptions, no static configuration exists for the components of a family of systems or tactical network infrastructure. In this environment, it becomes a practical necessity to focus on critical high-level Information Exchange Requirements (IERs, in the new terminology) and other critical system performance parameters (for example, information assurance). At the same time, the low-level technical interoperability must be verified as capable of supplying the "wire" between systems.

With technology, systems, architectures, and operational configurations in a constant state of flux, periodic verification of interoperability is an important element of the interoperability test methodology. JITC helps to ensure continuing effective interoperability by participating in joint exercises and real contingencies. Results from these events confirm a system's interoperability status, or trigger a reassessment if serious anomalies are uncovered.

Q

What is interoperability test certification?

A

Interoperability test certification is the process of ensuring that a system meets the joint information interoperability requirements of its users. It includes the collection of the data necessary to determine whether or not the system conforms to applicable interoperability standards and can effectively exchange all required information with all other required systems.

Q

Why certify for interoperability?

A

Certification is confirmation from an independent evaluator that assures the warfighter that the Commanders-in-Chief (CINCs), Service, and Agency systems can interoperate in a joint team.

Q

Who certifies that a system is interoperable in a joint environment?

A

The Joint Interoperability Test Command, an element of the Defense Information Systems Agency, has responsibility for certifying joint interoperability of all DoD systems. The Joint Staff certifies the actual requirements; JITC certifies that the system meets those interoperability requirements.

Q

What systems need to be certified?

A

All NSS and IT systems, regardless of acquisition category (ACAT), that produce, use, or exchange information between Services, Agencies, or countries, must be evaluated and certified by JITC.

Q

When should systems be certified?

A

All systems must be certified before they are fielded, usually before Milestone C or Initial Operational Capability (IOC). Fielded systems must be re-certified every three years or upon changes affecting interoperability or supportability. The system proponent should contact JITC early in the acquisition process to ensure that certification is both timely and cost effective by leveraging off other testing wherever possible.

Q

What is involved in the interoperability test certification process?

A

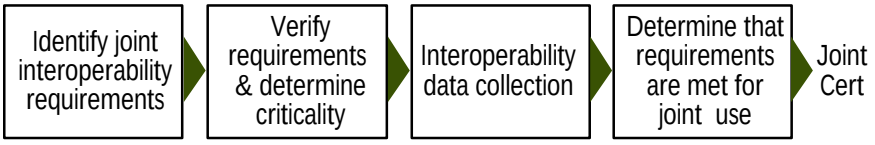
JITC follows the processes outlined in the May 8, 2000, Chairman Joint Chiefs of Staff Instruction (CJCSI) 6212.01B, *Interoperability and Supportability of National Security Systems and Information Technology Systems,* to perform its joint interoperability test and certification mission. This Joint Staff instruction has recently been updated to mesh with changes to the requirements generation process and to ensure that interoperability certification is addressed during the acquisition of all NSS and IT systems, regardless of ACAT. JITC implements joint test certification in a four-step process that is depicted in Figure 1.

Identification of All Joint Interoperability Requirements

Interoperability testing begins with identifying requirements from traditional sources such as Mission Need Statements (MNSs) and Operational Requirements Documents (ORDs). But MNSs and ORDs are sometimes outdated and incomplete.

On April 15, 2001, the requirements generation process was strengthened with publication of a revised CJCSI 3170.01B, *Requirements Generation System,* which serves to improve the identification of interoperability requirements. This updated instruction mandates identification of interoperability Key Performance Parameters (KPPs) for Capstone Requirements Documents and ORDs and defines time-phased requirements in support of incremental acquisitions. To complete the requirements picture, we examine how the system will fit into the present and future joint operational networks and archi-

FIGURE 1. Joint Interoperability Certification Process



tectures—a process aided by JITC's active participation in exercises and contingencies.

User Requirements Confirmation

Once requirements are identified, JITC extracts interoperability requirements from system documents and develops a joint interoperability requirements matrix. JITC coordinates this matrix with the program manager and the user community to verify requirements and determine criticality.

Interoperability Data Collection

Interoperability data to support evaluation efforts is then obtained from appropriate test events, to include JITC- or Service-conducted tests. While each NSS or IT system presents unique challenges, JITC divides interoperability assessments into two basic categories: information transport and information processing. The interoperability issue with information transport is the complete, accurate, and timely transfer of information from one system to another. The objective of this assessment is to determine the ability of the system to send and receive information in its intended operational environment.

As an example, JITC assesses tactical communications equipment in terms of supporting a notional Joint Task Force (JTF). While the Services acquire tactical communications equipment focusing on Service requirements, JITC's wider viewpoint determines the degree that this equipment interoperates within the overall requirements of the JTF—the capability of the system to transfer data, voice, imagery, and the system management functions required for JTF operations.

Interoperability assessment of information processing requires more than the bits, bytes, and protocol testing of the transport mechanism. JITC assesses systems from end-user to end-user to determine how one system interacts with other systems in order to evaluate whether they can exchange information and services in a joint environment. The objective of this testing is to assess the ability of the system to process and present information to and from other systems in the joint architecture.

As an example, during joint theater air and missile defense evaluations, JITC's data collection/analysis efforts often extend to three levels of interoperability. The first level is standards conformance certification to verify the exchange of information is in accordance with applicable military and commercial standards and standards profiles, as required by operational and technical architectures. System capability is the next level examined. Interoperability with respect to defined system performance parameters is verified, using a variety of tools. Finally, the assessment of operational levels of interoperability ensures that components satisfy the user's needs in a realistic environment.

JITC's Joint Operational C4I Assessment Team (JOCAT) capability is one means of obtaining operational interoperability data. JOCAT is a worldwide deployable team consisting of equipment and personnel with the capability and expertise to provide on-site interoperability analysis and support during field exercises and real-world contingencies. The JOCAT monitors the Joint Data Network (JDN); selected voice networks; Tactical Information Broadcast Service (TIBS); Tactical Receive Equipment and Related Applications (TRAP) Data Dissemination System (TDDS) network; the Joint Planning Network (JPN); and exercise Distributed Interactive Simulation (DIS) networks. JOCAT provides automated methods to identify items of interest and interoperability anomalies for immediate analysis. The automated methods of JOCAT process the data collected at various interfaces to provide valuable and timely feedback.

Determining the Status of Interoperability

All relevant data are used to determine the interoperability of a system and all its interfaces. JITC publishes the determination in a letter of certification sent to the program office; the Services; the Joint Staff; and acquisition executives such as Director, Operational Test and Evaluation (DOT&E); U.S. Joint Forces Command; Under Secretary of Defense for Acquisition, Technology and Logistics; and Assistant Secretary of Defense for Command, Control, Communications and Intelligence (C3I).

FIGURE 2. JITC's Areas of Expertise

- Asynchronous Transfer Mode (ATM)
- Combined Interoperability
- Command and Control (C2)
- Defense Information System Network (DISN)
- Defense Message System (DMS)
- Defense Red Switch Network (DRSN)
- Defense Travel System (DTS)
- Department of Defense Intelligence Information System (DODIIS)
- DFAS Corporate Information Infrastructure (DCII)
- Electronic Business / Electronic Commerce (EB / EC)
- Global Command and Control System (GCCS)
- Global Combat Support System (GCSS)
- High Frequency Test Facility (HFTF)
- Information Assurance (IA)
- Joint Theater Air & Missile Defense (JTAMD)
- National Imagery Transmission Format Standard (NITFS)
- National Missile Defense (NMD)
- Satellite Communications
- Security Management Infrastructure (PKI and EKMS)
- Tactical Communications
- Tactical Digital Information Link (TADIL)
- Telemedicine
- US Message Text Format (USMTF)
- Unmanned Aerial Vehicle (UAV)
- Logistics Systems

Q

How do you get and keep your system certified?

A

- Contact the JITC as early in system development as possible. This allows JITC to piggyback on planned system testing.
- Coordinate all testing with JITC, so joint interoperability can be integrated into the test program schedule.
- Consult JITC on changes in requirements or capabilities in order to keep certification status current.

Q

What will JITC do to help get your system certified?

A

When a program manager contacts JITC early in the acquisition program, JITC will:

- Assist in identifying joint interoperability requirements during the concept/design phase of the program.
- Provide advice so that interoperability is built into the system from the start.
- Plan for the most efficient use of testing resources.
- Assist the program manager in identifying solutions to interoperability problems necessary to get the system certified.

About JITC's Test Program

JITC's philosophy is to test for success; thus, the objectives are to characterize and certify systems using affordable levels of confidence to ensure an operational interoperability capability. JITC also has a range of tools available for system assessments, and laboratories and networks for testing virtually all types of NSS and IT systems. Figure 2 displays some of JITC's areas of expertise.

Q

How does JITC track the certification process?

A

One difficulty in achieving joint interoperability is identifying systems with external interface requirements and tracking the interoperability status of these systems throughout the life cycle. JITC is attacking this problem by developing the System Tracking Program (STP) to better manage interoperability. The STP itself is an evolutionary development based on a simpler test scheduling application. Responding to new policy, the STP has evolved to a Web database that includes system information from the concept phase, as requirements documents are initially staffed, to re-certification requirements for mature systems.

> Systems that have interoperability integrated into their development and testing plans have a shorter, smoother path to deployment and provide the best support to the warfighter. Programs where interoperability issues have been sidestepped may later suffer delays, cost overruns, or worst of all, contribute to deadly mistakes.

Test scheduling and current interoperability status of systems are still core capabilities of the new database; however, this has been augmented with Interim Authority To Operate (IATO)—a temporary "waiver" of certification requirements—and automated notification of expiring certifications. The mature STP will provide a single source to determine NSS/IT system interoperability status (i.e., overall system and individual interface results), system and test event information, results of any standards conformance testing/certification, and online links to certification letters and detailed test reports. Populating the STP with "heads up" information when requirements are first approved allows identification of systems not tested. By tracking the life cycle progress of interoperability, STP helps paint the big picture of DoD interoperability.

Q

What does the future portend?

A

Too frequently, interoperability has been force fitted and tested into systems. The new direction strives to achieve the rhetoric of having systems "born joint." DoD policy now calls for system interoperability requirements themselves to be certified. In addition, supportability —including the expected support from infrastructure networks—must be documented in a C4I [Command, Control, Communications, Computers, and Intelligence] Support Plan. Supportability itself, another essential ingredient of interoperability too often ignored, must be certified by the Joint Staff.

These steps will ensure that interoperability requirements are addressed in the system requirements documents and that the existing and planned infrastructure can support the exchange requirements of new and modified systems.

Far from being the end game, joint interoperability is only a step up the ladder to satisfying international interoperability issues. Combined and coalition interoperability will remain suitably challenging. The variables in equipment, versions, basic technology, and configurations that could possibly be encountered in combined and coalition environments will continue to "test the testers" far into the 21st century.

Joint Certification No Longer a "Nice to Have"

Our nation's forces deploy and execute their assigned missions as members of Joint Task Forces. Operational networks

clearly reflect this Joint Force composition and carry with them the requirement to exchange information across Service, Agency, and national boundaries. The Service-sponsored process through which systems have been procured, and the rapid acquisition of readily available and low-cost C4I technologies, have posed challenges to ensuring that all systems are capable of operating when placed in a joint environment.

C4I capabilities have been fielded that enhance the capabilities of the specific user but may degrade overall system performance when viewed from an integrated, joint perspective. Such noncertified NSS and IT system procurements did not participate in the joint certification process. Recent updates to the requirements generation and interoperability certification processes will establish a means to overcome these challenges and better enforce the requirement for NSS and IT systems to participate in the joint certification process.

JITC, as the sole certifier of DoD systems, will continue to play an active role in the interoperability test certification process. The ultimate beneficiaries will be the warfighters, who will be provided with higher levels of assurance that the systems procured for their use will interoperate and provide the information superiority needed to achieve the Joint Vision.

Editor's Note: To obtain more information about the joint interoperability certification process, please contact 1-800-LET-JITC or visit the HITC Home Page at *http://jitc.fhu.disa.mil*. The authors welcome questions or comments on this article. Contact Tran at *tranp@fhu.disa.mil*; contact Douglas at *douglasg@fhu.disa.mil*.

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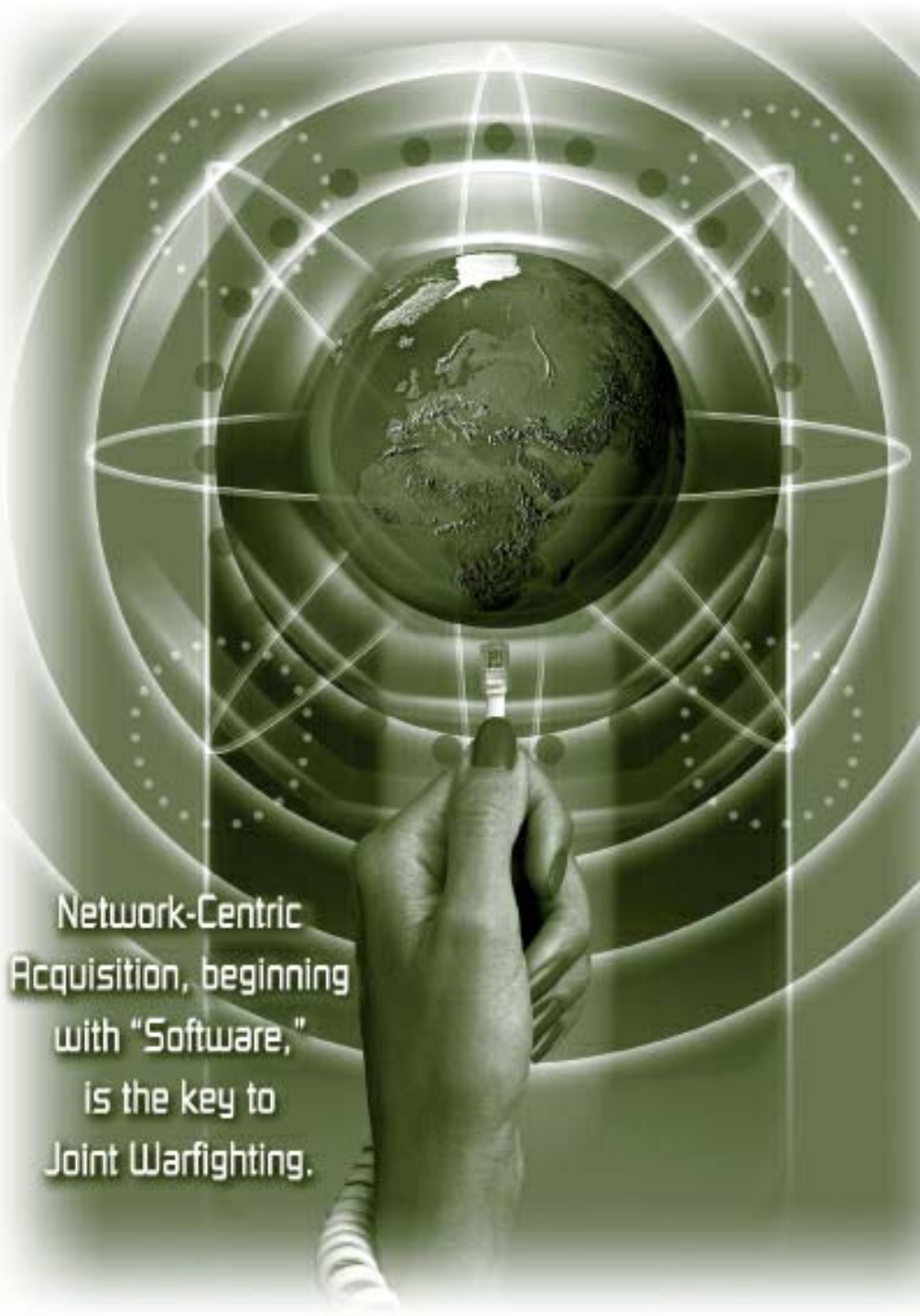
Network-Centric Acquisition

The Key to Joint Warfighting

DR. R.A. LEFANDE

Joint warfighting is obstructed by the finely divided acquisition process. The field commands are unified, the Joint Forces Command is simulating the effectiveness of Joint Warfare, and the Secretary of Defense's massive staff holds all the pieces in place. Yet the individual Services retain the "Organize, Train, and Equip" mandate bestowed by the United States Code, and they maintain hundreds of isolated programs to acquire materiel components that must function in unison when the Joint Force goes into action. The proprietary sociology of these disparate programs contributes to perceived duplication and waste that erodes public confidence and often causes poor interoperability. And interoperability, DoD now recognizes, is *essential* to Joint Warfighting.

Application of Network technology to materiel acquisition could achieve true "Jointness"—just as it is expected to magnify Joint warfighting effectiveness. A Network-Centric Acquisition process would ensure interoperability, eliminate rapid platform obsolescence, shorten response times when new threats emerge, and reduce unnecessary costs—if only the sociological minefield can be cleared.



The Traditional Acquisition Process Has Its Roots in the Civil War

Problems with "shoddy" materiel and corrupt suppliers during the Civil War led to the creation of what became the MILSPEC [Military Standards and Specifications] system of product definition and the career Civil Servant whose job

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security provided some protections against the temptations to accept unsuitable materiel in exchange for personal gain. Thus evolved the famous 100-foot shelf of detailed "how to" specifications and the much-maligned "Bureau-cracy," which allowed the government to procure materiel in a price competition while ensuring that the cheapest item was still good enough for the job.

Detailed specifications also ensured that parts made by any number of suppliers could be used interchangeably, and that the logistics chain was burdened only by the essential number of unique items. This raised the "entry cost" for new suppliers who just wanted to sell their existing products or for those suppliers lacking the necessary "process controls," but it also provided a measurable description of what the government wanted and a reliable basis on which to develop a "bid" price. In essence, the "military" specifications were little different from those used by the phone company, aircraft manufacturers, and others who needed to buy parts from many suppliers with the confidence that they would mate-up with the other parts and work as intended—and they were *Joint.*

Today's Management Fads Disregard the Lessons of the Past

Every line in the thousands of MILSPEC pages was based on some—perhaps long forgotten—adverse experience or careful research that did not have to be repeated as long as the specification was followed and/or the external conditions remained unchanged. The knowledgeable Program Manager was expected to "tailor" the procurement by selecting only the paragraphs or operating conditions that were the least demanding (expensive) but would still work under warfighting conditions.

Currently, fashionable "reinvented" acquisition models discard these "hard learnt" lessons in favor of "performance" specifications at the platform level that trust the contractor to make the detailed engineering choices. Natural Selection of the high-technology marketplace is assumed to have made the shrinking pool of suppliers better equipped to make the engineering trade-offs than the forgotten authors of the moldy old specifications.

This "reinvented" model ignores the realities that most of the military-industrial giants are almost wholly dependent on the government for support; that there is little commonality between commercial and military items more complex than toilet paper; and that bigger issues such as commonality, interoperability, survivability, and life cycle support may be more crucial to Joint Warfare than are first-cost or paperwork reduction.

Buy as Industry Buys, Not Just From Industry

The successful manufacturer of complex systems maintains effective "System Engineering" controls over its product lines, which ensure that the system will perform as expected if each component performs within its specified tolerances. They use the "System Engineering" process to maximize efficiency by sharing components among various models, and negotiating with component suppliers to adjust "requirements" when a more cost-effective product would result, thereby ensuring that failure (or cost growth) at a single component supplier doesn't jeopardize the product line. This has been done manually with drawings, printed specifications, test fixtures, and other technologies of the day for hundreds of years because it was necessary to ensure that the commercial or military system performance was "under control."

It continues today with Computer Aided Design (CAD), Networked Data Sharing, Computer/Numerically Controlled (CNC) machines, and widely accepted standards for materials and components—not only to control the system-level outcomes but also to maximize efficiency. New automobiles or commercial aircraft are designed and tested as far as possible in the digital realm before any metal is bent; a single database is shared by the designers of each "piece-part"; each component design is "negotiated" with the potential suppliers to avoid unnecessary special "tooling" or exotic materials; and the Deming-esque/"Six-Sigma" controls are built in.

Software—the biggest challenge to current defense acquisitions and the biggest "show-stopper" in joint operations—is an integral part of this "Network-Centric" development process. A single, carefully controlled repository for the software design is owned by the manufacturer, is accessed by all contributors, and is used in real or virtual testing. "New" features are added only when a proven "algorithm" cannot be "reused"; "code" (machine-readable instruction) is generated automatically to suit the latest processor hardware.

This is how modern industries build their products, and it is the way the government should be building *its* products—not merely buying disjointed platforms or sub-systems from industry. The Joint Warfighting Entity should be *The System*, with the design data and software *Owned by the Government* to be reused, shared, and improved by all concerned—*Jointly*.

Components of Modern Warfighting Sub-Systems Evolve at Different Rates

The wonderful digital electronics components that produced the "New Economy" and made Network-Centric Acquisition common practice outside of the Defense establishment, become obsolete in the time it takes to complete a single deployment. The hardware and manufacturing methods for Hull, Machinery and Electrical (HM&E) sub-systems of ships change at a relatively glacial rate and—in this country at least—are practiced only on behalf of the government. Some software algorithms—the mathematical prescription, not the "code"—haven't changed in centuries, but they are "developed" anew for each platform or sub-system simply because of the disjointed acquisition process.

Current contractor-centric/platform-level acquisition philosophy is ill suited to accommodate these disparate evolutionary time-scales, and blending the

lost arts of the industrial age with the lightning obsolescence of information dominance is an invitation to failure. A computer chip selected when the keel is laid will be quaint by the time the ship is christened; and the algorithm to counter the newly observed war-reserve mode of an anti-ship missile may have to be broadcast while the missile is in flight.

Choices made in a competitive platform-level/performance-based procurement are bound to bring a sub-optimum blend of technologies and manufacturing know-how despite the elaborate "teaming" arrangements that often appeal more to congressional interests than to the need for warfighting agility. "Network-Centric" Acquisition allows the "Long-Lead" ship (i.e., the HM&E)—now a small fraction of the life cycle cost—to be built with little more than a "space, weight, and power" provision for the payload. Electronics hardware can be assembled out of modular building blocks made by automated processes wherever possible, tested at land-based test facilities, and loaded onto the ship along with the other "stores" just before the deployment. Software "code" can be "broadcast" to the ships and other users at any time, having been assembled out of certified modules and tested with mathematical rigor for reliability and interoperability right up until its insertion.

Accommodation to incompatible evolutionary time scales at the component or sub-system level is the essence of the agile Network-Centric model and anathema to the Platform- or Contractor-Centric model.

Time and Industrial Base Reconstitution are Still Factors in Preparedness

Information dominance expected in Network-Centric Warfare may multiply the effect of the few thousand missiles, shells, and bombs that we will take to the initial engagement by factors of 10 or 100 (although this has not been proven in recent experience), but complete preparedness must consider replenishment and even Industrial Base reconstitution.

In the great wars of the past, we could convert our industrial capacity to "ramp up" production while our allies paid dearly for the lead-time. Today, we no longer build commercial ships or consumer electronics, and many electronic components are made overseas with the inherent risk of transportation disruption or even hidden information bombs.

The government preserved the warfighting manufacturing know-how of the past in MILSPECs, arsenals, shipyards, and even in warehoused tooling for munitions and other specialized items. Commercial plants converted to war materiel often kept little more than the buildings, skilled workers, and general-purpose tools. The plants are now fewer and are optimized for "lean"/"Just-In-Time" manufacturing with little surplus capacity, but they also have flexible CAD/CNC capabilities that could be switched to intermittent or continuous military production via Network-Centric Acquisition—*if* things are planned that way.

Acquisition planning must include provisions for expandable production if we wish to have palatable options when our political objectives cannot be obtained with the stockpiled materiel. This may require design compromises and/or government investments in manufacturing capacity to ensure that the flow of munitions and replacement platforms could be maintained in any plausible scenario. This will be more expensive than "buying-out" the production run of a platform or weapon with maximum peacetime efficiency, and it will require use of the Joint Network-Centric Acquisition methodology to maximize commonality and to avoid dependence on components or materials that may be denied in wartime.

Digital/Network Technology Can Preserve Past Lessons with Modern Efficiency

Manual methods of the past appear awkward to the dashing innovators of today who confuse the rapid evolution of feature-laden consumer electronics with military information systems. Rapid obsolescence, unknown provenance, limited interoperability, and short time between stoppages make these suitable only for the least critical "support" functions such as briefing preparation. And their connection to any warfighting network is reckless at best.

These tools—or their more sophisticated industrial cousins—can be applied with discipline and care to modernize the paper specifications and hardware tooling of the Industrial Age with digital drawings, machining instructions, and "drill-down" traceability to the knowledge base of analysis and historical experience that underpins every choice. Network-Centric Acquisition uses digital tools to organize, access, share, preserve, extend, and apply this hard-won knowledge base rather than discard it because it seems clumsy to those impatient to leap ahead in technology or to streamline the process.

Today's version of the streamlined acquisition exposes the Defense effort to the risks of re-learning many past lessons and introduces perverse incentives that cause program managers to pass the "risk" to the supplier, even though the government will pay in the end. Reduction of risk at the program level is instilled in each program manager, even at the expense of the joint enterprise. Opportunities to optimize the wider/long-term goals of commonality, interoperability, and evolutionary upgrades, on a variety of timescales, are missed at every level—from a single program office to the entire Department of Defense.

In its full maturity, Network-Centric Acquisition will have a single, Joint database containing the digital prescription to make every piece of hardware and software that will be procured, supported, and employed by the Joint Force. "New" ships, tanks, or aircraft will evolve from existing designs by changing only the components that must change to achieve the new level of cost effectiveness in the face of old or new threats. Any component could be replaced if a new supplier wishes to enter the competition or if the availability of some material or piece-part is

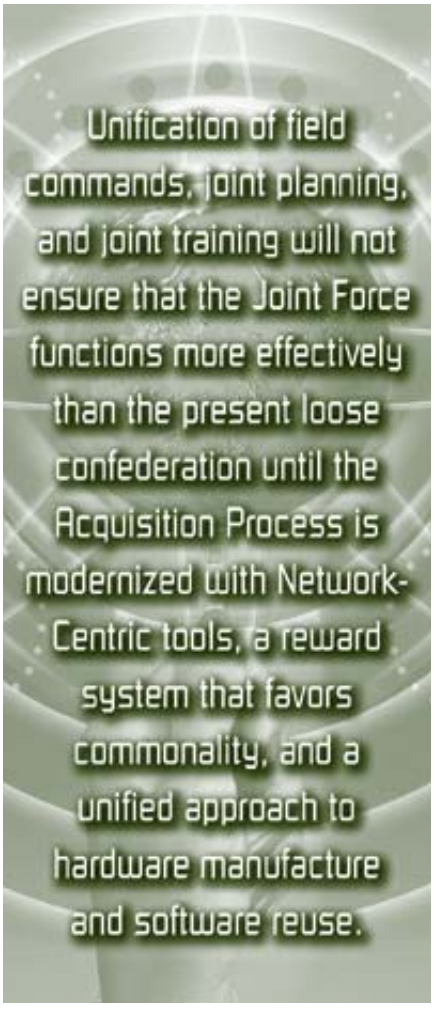
threatened by supplier failure or enemy action. Preference will be given to components that can be made automatically by as many manufacturers as possible; and final assembly or maintenance will be performed by interchangeable contractors, perhaps at Government-Owned Facilities.

Software is the Major Factor In Today's Cost and Risk, and is Most Amenable to Network-Centric Methods

While the vision of Network-Centric Acquisition is little beyond a mirror of enlightened Commercial "Best-Practices," the conversion from today's Contractor-Centric model will be resisted by entrenched interests and current Platform-Centric sociology. Unavoidably, it must be introduced while the current process continues to function as best it can.

The most appropriate place to start is with software that has no production phase or inertial manufacturing plant—in other words, software that is all "development." This "development" may continue forever through so-called "maintenance" (correction of development errors) and upgrades (provision of new or previously overlooked "requirements"), and is hugely redundant as very few "functions" are unique to a given platform or application. Software is also the primary cause of the failed interoperability that obstructs the effective functioning of the Joint Force, and is frequently the cause of ineffective weapons or destroyed platforms. Even within a single Program Office or platform, redundant software development is tolerated at the sub-system level lest the contractors' creativity be stifled or the risk be transferred to the government.

The progressive/Network-Centric approach to software acquisition minimizes both cost and risk at the individual program level while ensuring that each sub-system supports the Joint warfighting need for interoperability, security, and configuration control. As long as individual programs within the Services are allowed to optimize their individual outcomes on the time-scale of individual tours, the waste and redundancy will continue; and the Force-Multiplication expected of Joint Warfare will be divided by the inability to share information.



The Journey to Process Improvement Starts With Government-Owned Design and Government-Furnished Software

Whether hardware or software, the key to Network-Centric Acquisition is government "ownership" of the designs for which it has paid. The digital equivalent of drawings, specifications, "source code," and other elements that would allow a third party to produce identical copies must be a "deliverable" in each procurement action. The Design is the Product in the case of the software, and the quality of the documentation produced by the platform or sub-system supplier should be tested by having the actual software instructions prepared by a separate entity—using only the delivered documentation—and passed back to the supplier for testing and use. If the instructions do what the documentation calls for, but the end item fails to work as required, the supplier would be expected to investigate the cause of failure and correct the documentation, which would then be used to reform the "code" until it is correct.

If this appears to be too tedious or expensive, it must be compared to the current methods of uncovering errors by crashing aircraft or dropping bombs on friendly forces. Once the process is underway, modern software description tools would be used to filter-out all but the most subtle design flaws, and a library of Government-Owned/Furnished software building blocks would be available for preferred reuse. The improved software acquisition process would lead to enterprise-wide cost avoidance and reduced risk of mission failure; and would increase the probability that the interoperability and information sharing that are fundamental in the operation of a Joint Force will be achieved.

Both the Congress and the Shore Establishment Must Cede Their Territorial Imperatives

Preparation for Joint Warfighting is impeded by difficulties inherent in equipping a Joint Force by the separated Services. Divisions continue like fractals to the finest levels of former Secretary of Defense Robert S. McNamara's program elements and the shore establishment's program sponsors. Each identified program "belongs" to some warfare specialty where its existence and partitioned identity is treated as the equivalent of a "Command at Sea" to be protected until it can be handed over to one's relief.

It is unimaginable or impolitic to peek over the partition to see if one's "requirement" might be met by adding a function or stanza of software to another's program or to depend on another to perform their task effectively—just as one would in Joint Warfare. These divisions are exacerbated by the Congress' insistence on the auditable separateness

of the Program Elements and contract awards that can be traced to their districts and trumpeted as effective representation.

A more streamlined acquisition program structure and a reduced staff requiring programs to sponsor would act as a direct counter to this centrifugal sociology; but a more enlightened, Network-Centric approach, perhaps with a different reward system, could lead to the desired results. The Shore Establishment analyst could be encouraged to introduce "new" capabilities by studying the existing inventory of hardware-software building blocks through the use of the modern information sharing tools of this digital age. Those pursuing new capabilities could be rewarded more highly for, say, finding ways to add a new piece of information to an existing data link rather than marketing a whole new set of communications gear that would be dedicated to their peculiar function.

Congress could reinforce this behavior by encouraging consolidation of Program Elements and monitoring the performance of their districts through cumulative results based on their [constituents'] ability to contribute quality components or sub-systems by following the Network-Centric way.

Network-Centric Acquisition, Beginning with "Software," Is the Key to Joint Warfighting

Unification of field commands, joint planning, and joint training will not ensure that the Joint Force functions more effectively than the present loose confederation until the Acquisition Process is modernized with Network-Centric tools, a reward system that favors commonality, and a unified approach to hardware manufacture and software reuse. The lessons in Industrial Best-Practices provide a model for decentralized yet unified Defense Acquisition if the inertia of the staffs and vendors can be overcome.

The easiest and the most necessary area to get underway—before any force multiplication expected of Joint Warfighting could be realized—is with software that must operate as a single system.

Editor's Note: LeFande welcomes questions or comments on this article. Contact him at *pnpgrp@erols.com*.

Report of the Military Research Fellows DAU 2000-2001

From Chaos to Clarity:
How Current Cost-Based Strategies are Undermining the Department of Defense

Authors

Lt. Col. Warren Anderson, USAF
Lt. Col. John McGuiness, USA
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The latest Defense Acquisition University Military Research Fellows Report, *From Chaos to Clarity: How Current Cost-Based Strategies are Undermining the Department of Defense,* is now available in hard copy as well as online. Dated September 2001, the report details how DoD's cost-based initiatives fail to align with the Department's business strategy.

Historically, DoD has followed a generic strategy of differentiation, not cost leadership. The Department's beliefs, values, and mission are aligned to support this generic strategy. Office of Management and Budget (OMB) Circular A-76 and related initiatives, with their focus on cost, are not well suited for an organization such as DoD, which competes on quality, not cost. This misalignment of strategy and outsourcing policy has generated a great deal of concern within DoD, especially among base and installation commanders who must implement A-76 and related measures.

The authors make the case that A-76 results, as measured by savings goals, have not generated anywhere near the results expected. Indeed, cost-driven outsourcing strategies, according to their report, are undermining DoD. The effort put into OMB Circular A-76 and related initiatives is great, yet the savings are at best marginal. Evidence is now emerging that these initiatives are degrading mission performance.

The intended audience is the DoD acquisition, technology and logistics workforce as well as policy makers.

The report may be downloaded from the DAU Web site at *http://www.dau.mil/pubs/mfrpts/mrflist.asp*. Non-government personnel may purchase hard copies of DAU publications for a nominal charge by calling the Government Printing Office at (202) 512-1800; to fax a request, call (202) 512-2250. Government personnel may obtain single copies of DAU publications at no cost by writing or faxing a request, on official stationery, to the address shown below:

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Earned Value Management

Mitigating the Risks Associated with Construction Projects

QUENTIN W. FLEMING • JOEL M. KOPPELMAN

Everyone knows certain "truths" about Earned Value management. Such knowledge is often based on what we may have heard others say about the technique. For example:

"Earned Value is useful only on large government-funded contracts." • *"Earned Value is useful only on cost-reimbursable-type projects."* • *"Earned Value has no utility in the management of lump-sum or firm fixed-price work."* • *"Earned Value does nothing for construction projects."*

Respectfully, we take exception to these "truths" and would like to present a case for the employment of a *simple* form of Earned Value on all projects—large or small, cost-type and fixed-price—it really doesn't matter. The basic utility of Earned Value is to contain the cost risks associated with projects. Bad news never gets better with time. The earlier you know that you have a problem on your project, the better chance you will have to mitigate that problem.

While we believe you can, and perhaps should employ some minimal form of Earned Value on any project, as a way of facilitating this discussion we will cover using Earned Value on a *specific* type of project—a construction project. We will discuss the use of Earned Value on construction projects while employing either the Design-Bid-Build concept, or the Design-Build approach. Surprisingly, much of the basic Earned Value data is already available on most construction jobs. We will also make six

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specific *recommendations* for using Earned Value management to mitigate project risks.

What is Earned Value Management?

An interesting phenomenon exists in the construction industry. The industry probably uses parts of Earned Value management about as well as any industry. But, what makes it interesting is that in construction work, practitioners rarely use the term "Earned Value." Often, they do not even realize that they are in fact using a form of Earned Value. Anytime the construction cost engineers put a project baseline plan in place, *this* is Earned Value in its purest form. But ask cost engineers if they use Earned Value management and often you will get a blank stare.

A typical project baseline plan would consist of: 1) a detailed schedule containing all of the authorized work; 2) schedules containing the authorized resources to conduct the work; and 3) payments by the cost engineer to contractors based on their physical accomplished work, together with the original authorized budget for the work.

Earned Value management is a technique that can be applied, at least in part, to the management of *all* capital projects, in *any* industry, while employing *any* contracting approach. The employment of Earned Value requires a three-dimensional measurement of project performance, ideally from as early as possible—perhaps as early as 15 percent complete, up to 100 percent final completion. However, two of the three dimensions of Earned Value—the baseline plan and the physical performance measurement—will apply to *all* capital projects, in *any* industry, using *any* contracting method.

Point: People sometimes get "hung up" on precise terminology. The ardent proponents of Earned Value will often use specific terms with exact meanings. Most construction managers may not use the Earned Value terms "Planned Value" or even "Earned Value," but the process they go through to establish their baseline plans and then to measure performance against their plans is exactly the same. Only the jargon may be different.

To understand the concept, we must understand the following three dimensions of Earned Value:

- *Planned Value*, which consists of the authorized work, along with the authorized budget, within the authorized time-frame, which in total forms the project baseline.
- *Earned Value*, which is the authorized work that has been completed, plus the original budget for the work.
- *Actual Costs*, which are the actual costs incurred to convert the Planned Value into the Earned Value.

Both the Planned Value and the Earned Value dimensions will apply to all construction projects. Only Actual Costs are sometimes unknown in construction, particularly on fixed-price or lump-sum jobs. In the discussion covering progress payments later in this article, we offer a few recommendations to help better manage the process.

What is the Design-Bid-Build Concept (or Engineer-Procure-Construct Method)?

The more traditional, established approach to construction is called the Design-Bid-Build concept, or, sometimes also referred to as the Engineer-Procure-Construct method. This approach takes a new construction project and breaks it into three distinctive but sequential phases:

- The complete design of the new item.
- The execution of a competitive solicitation, bidding, and construction contract award process.
- The actual construction of the new facility.

Today, construction work is most likely accomplished under the Design-Bid-Build approach.

To start Design-Bid-Build, a selection is made of an architectural or design firm to capture the thoughts of the owner of the new project. Because this broad conceptual direction is often subject to changes as the design solidifies, such work is often (but not always) done on a soft or cost-reimbursable contract basis. The owners often start out by describing what they envision as a final product, but will often change directions to the architect as the design evolves. The design firm, taking directions from the owner, then completes the definition up to what

is described as the 100 percent complete design point.

Next, the owner will take the final 100 percent construction design and, often with the professional assistance of others—perhaps a project manager, sometimes a construction manager, or sometimes both—will prepare a solicitation package to request firm quotes from multiple construction firms. The final design will take the form of drawings and specifications sufficient to the extent that an experienced independent constructor can bid on a new job with precision and confidence. This is the bid or competition phase of the project, which will often take several months to complete, depending on the size and complexity of the project. Often, but not always, the original design firm is also retained and used in conducting the process.

Once a contractor is selected, a contract is awarded to the successful construction firm—quite often to the lowest responsible bidding firm. The physical construction work will be started. As discussed earlier, once final construction work begins, a common practice is to retain the original design firm to assist the project manager, construction manager, or both with the interpretation of design requirements. Typically, design contracts will be cost-type, while the construction work is most likely lump-sum. But there are exceptions.

From the start of design through the bidding and selection process through construction, the final product will be built and delivered; and the team will then be dismantled and sent on to the next project. Sometimes, however, open items called construction claims will remain to be settled. These open items will eventually be settled and the project completed.

Under Design-Bid-Build, the ultimate construction contractor is *not* a part of the original design team. Thus, the designers will not gain valuable input from the people who will do the final construction work and will be spending the majority (perhaps more than 90 percent) of the project dollars. Some believe this is an important opportunity that is needlessly lost.

One last important point on the three-phased Design-Bid-Build process. Some maintain it contains opportunities for construction claims to proliferate. The final settlement of the costs of construction claims can easily exceed the original costs of the design. Many owners suspect that the original 100 percent designs, completed without valuable inputs from the physical constructors, may contribute directly to construction claims.

Undoubtedly, the Design-Bid-Build approach is the most popular approach in construction. But performing the work in three distinct sequential phases takes time. Hence, someone came up with the idea of a faster approach. Enter the "Design-Build" concept.

What is the Design-Build Concept (or Design-Construct Method)?

While the Design-Build concept has been practiced in Europe since the 18th century, only recently have most project owners accepted its broad use. Under the Design-Build concept, a *single* contractor assumes complete responsibility for both completion of the final design and the resulting construction effort. Hence, the final design effort will have inputs from the ultimate constructor.

The owner starts the process by authorizing what is called the "preliminary design" for the project. The owner will contract with an independent design firm to create a design definition sufficient to allow a Design-Build firm to bid on the total remaining effort, including both the final design work and construction work.

Just what constitutes a preliminary design will vary from project to project. But the preliminary design is typically described as representing the 20 to 35 percent point in the design process. Some projects increase or decrease these percentage values, and the exact point is an arbitrary one at best.

Once the designated preliminary design point is reached, the owner will typically issue a formal Request for Qualifications response from firms with experience in Design-Build contracting. Prospective firms in Design-Build—often construction firms—will either complete the final design themselves or subcontract outside for the completed design. Or, many experienced Design-Build firms will employ some combination of participation from designers and constructors. Most critical, however, is the fact that the Design-Build firms have a proven track record in this type of construction. The assumed savings in both time and money to the owner come from assigning a single point of responsibility with the use of Design-Build.

An initial "big-list" of potential Design-Build contractors will be evaluated based on their responses, and then reduced down to a "short-list" of only qualified contractors. From the short-list, the owner will solicit formal bids with a Request for Proposal. The short-list of final contractors will represent perhaps only three or four contenders. Because this final bidding process places a financial burden on the qualified prospective bidders, and to keep all of them in the bidding process, an accepted practice emerging in some quarters is for the owner of the project to grant a small "honorarium" to the short-list of final contractors. Such honoraria simply defray some of the costs of bidding. The owner will then make a final selection, awarding a single contract to a firm to complete the final design and perform all of the construction effort on the project. Design-Build begins.

Proponents of Design-Build suggest that this approach provides substantial benefits to the owner. Among the described advantages are:

- A single point of responsibility for both the final design work and the construction.
- A shortened time-table for overall project completion.
- Total project costs known at the outset.

- Higher quality.
- Innovations in the construction process, which are then incorporated into the final design.

Perhaps one of the most important benefits is the potential *reduction* of final construction claims that have resulted from the "professional" differences of opinion between the architects and designers vs. the constructors. If this point is in fact true, claim reductions alone could save considerably in the overall final costs to the owner.

One last point—the final Design-Build contract can take several contract forms, which will vary the risks to the owner. Three contract types are typically used in Design-Build relationships:

- Fixed-Price/Lump-Sum
- Cost-Reimbursable
- Cost-Reimbursable with a Guaranteed Maximum Price.

Some owners will separate the design from the construction phases and use a different contract type for each phase—a cost-type for the design phase and a lump-sum for the construction phase. Others will issue a single contract type for both the design and construction effort. Each of these three types carries its own unique risks, which we cover later in this article.

Monitoring and Analyzing Earned Value Project Metrics

Using Earned Value metrics, any project can accurately monitor and measure the performance of projects against a firm baseline. Measurement will take place at regular intervals—certainly monthly, but oftentimes weekly—where, as of a given point in time, the project will be determining: its Planned Value, its Earned Value, and the Actual Costs incurred. These three dimensions provide a wealth of data reflecting the true health of projects.

Using the three dimensions of Earned Value, the project management teams can at all times monitor both the cost and the schedule performance status of their projects.

To determine schedule status, we must first determine the Earned Value measurement. Remember, Earned Value represents two elements:

- The authorized work that has been completed.
- The original budget authorized to perform the completed work.

To determine the schedule position, we must take the Earned Value and subtract the Planned Value for the period being measured. A negative value indicates that the project is behind in its planned schedule position.

Falling behind our planned schedule is one of the first indicators that the project is experiencing problems. However, the Earned Value schedule position is best used in conjunction with critical path methodology. If the late tasks are on or near the critical path, they are important. If the late tasks have lots of float or slack and low risk, they are only interesting and merely indicate that we are behind our original plan.

To determine our cost position, we must also start with our measured Earned Value, but now we subtract the Actual Costs incurred to accomplish the Earned Value. A negative value indicates that we are overrunning our costs. Cost overruns are very serious in that they are rarely (if ever) subsequently recovered by the project. Keep in mind that our best planning, scheduling, and budgets will be front-loaded into the early phases of the project. Thus, if we overrun the early phases of the project, how can we expect to recover the overrun in the latter phases when the plans, schedules, and budgets are more uncertain?

Earned Value metric data can also be converted into efficiency factors so we can compare the efficiency rates of one project against all other projects in the organization. Earned Value data are also excellent for managing a portfolio of projects.

For example, if we take the Earned Value achieved and divide it by the Planned Value, we determine the schedule efficiency factor, which we call the Schedule Performance Index (SPI). Any SPI value less than 1.0 indicates that we are running behind with our planned schedule. If our SPI is .84, this condition indicates that for every dollar of work we planned to do, we only did 84 cents of work. The SPI provides a quantified metric.

Most important, however, is the cost efficiency we are achieving. Cost overruns are more serious than falling behind our planned schedule, only because in the end the schedule will eventually be recovered, whereas the cost overruns are rarely (if ever) fully recovered.

We determine our cost efficiency rate—the Cost Performance Index (CPI)—by dividing the Earned Value by Actual Costs incurred. Any resulting value less than 1.0 indicates that we are overrunning our costs. For example, a CPI of .82 indicates that for every dollar we incurred in expenses, we only accomplished 82 cents of value. Thus, we are overrunning our costs.

The significance of the CPI metric is empirically proven (with over 700 DoD projects studied) to stabilize at the 20 percent completion point of a project. Also, the CPI metric becomes progressively more stable as the project continues toward the 100 percent completion point. Thus, the CPI can be used to forecast the final project costs from as early as 20 percent into the project. To forecast total final costs, the total authorized project budget (Budget at Completion) is divided by the cumulative CPI. Thus, you can continually monitor and forecast the final required costs to complete your project. It is as simple as that.

Using Earned Value to Make Progress Payments on Construction Projects

Owners of all projects (including construction projects) must take care to never place themselves in a position of overpaying their suppliers for the work they complete. Stated another way, the very quickest way to increase the risks on any project is to overpay suppliers

for their completed work. Cost-type arrangements have inherent risks because some owners simply focus on the actual expenses incurred, without also closely monitoring the actual work accomplished for the monies spent. Earned Value management can help in this process.

Likely, the best way to mitigate construction risks on fixed-price or lump-sum work is to accurately measure the value of the work completed, together with the original budget authorized for the completed work, and then only pay for the actual work accomplished, less any withholds or retentions as may be allowed by the contract. Earned Value management can also help with this process.

Payments on "Cost-Type" and "Fixed-Price-Type" Contracts

Today, the two broad contractual environments prevalent throughout DoD are cost-type and fixed-price-type. Both need to be addressed separately—both represent separate issues.

Cost-Type Contracts

Cost-type contracts are sometimes (perhaps often) used in construction projects to cover the initial design work—both the preliminary and final design—in both Design-Bid-Build and Design-Build approaches. Additionally, on selected other projects that are considered to be inherently high risk for the constructor (for example, nuclear energy construction), cost-type contracts are sometimes used for all phases—both the design work and the construction effort.

Under a cost-reimbursable-type arrangement, the suppliers will be reimbursed each month for their actual costs incurred on the project, subject to the terms of their agreement. Payments of fees are normally withheld until specific deliverable objectives have been met. But all incurred costs (without fee) are submitted by the supplier to the owner, and are then paid by the owner. Sometimes on cost-type arrangements, where the process is not watched closely, there can be a wide disparity between the physical work done and the dollars spent. Thus, the risks to the owner escalate. We offer four recommendations to mitigate the risks with cost-type contracts. All owners on cost-reimbursable-type contracts should:

Recommendation No. 1

Require that the performing supplier (the designer or constructor) provide a *time-phased* "Schedule of Values" in which the sum of the line items will add up to the total contract value. A time-phased Schedule of Values provides the owner with a simple form of Planned Value against which performance throughout the life of the project may be monitored and measured.

Recommendation No. 2

Each month, as the suppliers submit their invoices reflecting the actual costs incurred, require that all contractors update their Schedule of Values reflecting a percent complete position, i.e., the Earned Value for the project. Thus, the owner of the project will have the means to monitor performance by comparing the Earned Value less the Planned Value to determine schedule variance, and also Earned Value less Actual Costs to determine the cost variance.

Recommendation No. 3

Always monitor performance of both the cumulative SPI and CPI to compare results of one project to all other projects in the enterprise.

Recommendation No. 4

Continuously forecast the likely final costs on the project using a simple but accurate estimating technique (the total project budget divided by the cumulative CPI) to provide assurances that the project will be completed within acceptable cost risks to the owner. Unacceptable risks would be any forecasted final position that exceeds the owner's available funds, or penetrates the Guaranteed Maximum Price.

Fixed-Price-Type or Lump-Sum Contracts

Under a fixed-price-type arrangement, the suppliers are typically given progress payments based on their demonstrated percentage of work completed, together with the authorized budget for the completed work. Again—pure and simple—this is Earned Value at its *finest*, as typically employed on most construction projects. One can easily establish the Earned Value baseline or Planned Value using one of two methods: "Schedule of Values" or "Critical Path Method (CPM) Schedule."

Schedule of Values

Just as we recommended for cost-type work, the Earned Value baseline, or Planned Value can be created with use of a Schedule of Values," which is time-phased. The Schedule of Values can be updated monthly to reflect the measured Earned Value and used to authorize payments to the constructor.

Critical Path Method (CPM) Schedule

Another very effective method to establish an Earned Value baseline would be to require that the performing supplier create and submit a "Critical Path Method (CPM) Schedule" with resources embedded into the CPM network—the sum of which must add up to 100 percent of the contract value. Assuming that your schedule software package has the ability to freeze this baseline, you will have in place the equivalent of a Planned Value baseline. Payments to suppliers will be made each month based on their reflected percentage completion—their Earned Value. (Note that the resource-loaded CPM schedule will work nicely on either cost-type or fixed-price work.)

Typically missing with fixed-price or lump-sum work, however, are the Actual Costs related to the Earned Value being measured. Without the Actual Costs related to the Earned Value achieved, we lack the ability to determine the cost performance efficiency factors—the CPIs—which are likely the most important metric in Earned Value management. However, there may be a way to get the information needed to bring owner risks down to acceptable levels, without invading the sacred cost ledgers of our performing fixed-price suppliers.

Whenever performing suppliers accept a fixed-price job, they are often highly reluctant (they adamantly refuse) to disclose to the owner how much profit they are making on a given job.

Question: Do we really care if our suppliers make a profit on our jobs, even a *big* profit? We don't think so.

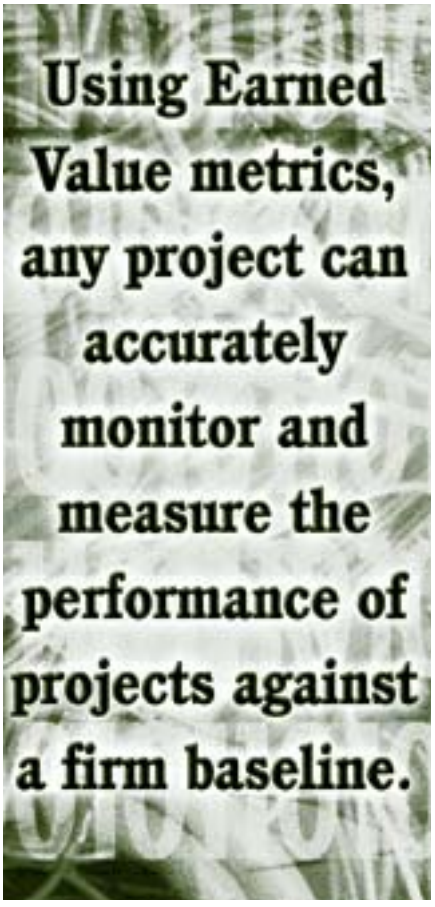
It's only when suppliers start incurring a loss, particularly a *big* loss, that we should really be concerned. The bigger the loss, the more likelihood the supplier may not complete the job. To mitigate risks to the owners, we need to know about, and to quantify potential supplier losses as early as possible.

Recommendation No. 5

Require that all fixed-price suppliers provide a financial projection of their anticipated costs incurred, to accompany their Planned Value projections contained within either the time-phased Schedule of Values or their resource-loaded CPM networks. Such costs-incurred forecasts should typically resemble what is commonly called an "S" shaped curve, or sometimes referred to as "one-half a bell shaped curve." Such financial curves typically will project a slow beginning, a fast acceleration in the middle, and then a slow close-down to completion. Unless extenuating circumstances exist, all project expenditure profiles should resemble an "S" shaped curve. Anything other than an "S" curve might indicate that the cost projections may be front-loaded. Always watch out for front-loaded project baselines.

Recommendation No. 6

As a condition to making monthly payments to fixed-price suppliers, require also that the Chief Financial Officer (CFOs) for your suppliers "certify" each month that they have *not* exceeded their own financial forecast of costs incurred. However, if they have exceeded their own forecasted values, require that they also disclose the *amount* of their costs incurred, so that you can compare it to the Earned Value and quickly determine the amount of loss the contractors are experiencing.



By closely monitoring the relationship between Earned Value and Actual Costs incurred, even on fixed-price jobs, owners may use these data to monitor supplier performance and take action early enough to mitigate the financial risks of projects. Although you may not eliminate such risks, possibly you may bring them down to acceptable levels.

Making Our Case

For this article, we have tried to make the case for using at least a simple form of Earned Value to mitigate the costs risks on all construction projects, either Design-Bid-Build projects or Design-Build concepts. Most of the data for using Earned Value is already in place on most construction projects. Only the performance efficiency factors and forecasting methods are typically not generated in construction work. But they certainly could be.

We believe the six specific recommendations offered in this article could help in this process. Likely, many project managers may believe that they do not need to have their performance monitored this closely, particularly when they are performing under a fixed-price or lump-sum arrangement. However, the risks of cost increases (called overruns) and potential project failures ultimately rest with the project's owner, and sometimes also with the surety companies underwriting construction performance bonds. Owners and sureties may well have different thoughts on the benefits of using Earned Value management to monitor construction project performance.

In our opinion, Earned Value management should have an important place in the management of any type of construction project.

Editor's Note: The authors welcome questions or comments on this article. Contact Fleming at *quentinf@msn.com;* Koppelman at *JKoppelman@Primavera.com*.

Send Us Your Suggested Research Topics

The Defense Acquisition University (DAU) is soliciting input from the Acquisition, Technology and Logistics (AT&L) workforce for suggested research topics or issues to assist the AT&L workforce in achieving their short- and long-range mission goals and objectives. If you have a suggested research topic, please contact Dr. James Dobbins, DAU Director of Research (*jim.dobbins@dau.mil)*, or call 703-805-5416.

DEPARTMENT OF DEFENSE NEWS RELEASE

Pentagon Construction

Ahead of Sept. 11, 2002, Completion Goal

RUDI WILLIAMS

WASHINGTON, Jan. 28, 2002—Workers are ahead of schedule in repairing the huge hole sliced out of the Pentagon Sept. 11, 2001, by a terrorist-hijacked airliner.

Brett D. Eaton, communications director of the Pentagon Renovation Program, said 100 to 200 employees a week have been able to return to the building as fast as workers rebuild sections. More than 1,000 employees so far are back from leased office space in surrounding communities, he said.

More than 24,000 military and civilian employees fill the Pentagon every workday. Thousands were displaced when the airliner slammed into the building, killing 125 people on the ground, Eaton noted.

"By the one-year anniversary, Sept. 11, 2002, people will be able to look out of their office windows on the E Ring deck to watch … a dedication ceremony that the Army Corps of Engineers are planning for a memorial," Eaton said.

Until about a month ago, crews were working around the clock, seven days a week, slowly knitting and weaving together the Pentagon's broken wings. Now, they work 20 hours per day, six days a week, with Sundays off.

Renovation plans call for this engraved stone to be placed at the crash site during dedication ceremonies on Sept. 11, 2002. The same quarry that produced the stones to build the Pentagon 60 years ago is again providing stone for current reconstruction efforts. Quarry workers at the Byee Stone Company in Ellettsville, Ind. signed the stone in honor of those killed when the hijacked airliner struck the building Sept. 11. Signatures also represent some of the hundreds of construction workers currently rebuilding the Pentagon. Photo by Rudi Williams

"This is fast-track-type work. We're working two 10-hour shifts, six days a week," said Keith Curtin, a construction superintendent. "We have many more people than you normally have on a job this size trying to get the work done as quickly as possible." About 700 workers are on site during the day and 300 at night, he noted.

Curtin and other workers started renovating the 60-year-old Pentagon wedge by wedge in 1997. They no sooner stepped back to admire their first rebuilt wedge when the crashed airliner demolished it. The building withstood the attack as designed—strength and security features added to the renovated section are credited with saving many Pentagon workers' lives, he said.

Curtin said the goal now is to "rebuild the wedge as quickly as possible." Their deadline is Sept. 11, the first anniversary of the terrorist attack.

"I think I speak for the entire renovation program and all the contractors when I say how great a feeling it is to be a small part of rebuilding the nation's military headquarters," Eaton said. "It's a feeling of pride we all have for being able to contribute any way we can. Everyone here realizes they're a part of history. They're helping to rebuild a national icon."

Congress recently provided additional money to speed the entire Pentagon renovation project. The scheduled completion has moved up four years to 2010, Eaton noted.

When the outermost wall of the destroyed wedge is replaced, the Pentagon's exterior will look almost exactly as it did before the terrorist attack, Eaton noted. The interior, once again, is being rebuilt with reinforced concrete and other safety and security measures that will make it stronger and more modern than the rest of the building, he added.

The Pentagon cost $50 million to build in the early 1940s. The total renovation cost now, including rebuilding the damaged area a second time, is about $3 billion. Once completely renovated, the Pentagon will have all new mechanical, electrical, and plumbing systems; elevators and escalators; cable management systems; improved fire and life safety systems; and flexible ceiling, lighting, and partition systems.

A large sign is being erected at the crash site that reads:

"Terrorist attacks can shake the foundations of our biggest buildings, but they cannot touch the foundation of America."

—President George W. Bush
Sept. 11, 2001

Editor's Note: This information is in the public domain at *http://www.defenselink.mil/news*.

From Now to the Objective Force

An Architectural Approach to Soldier Systems

COL. THEODORE "TED" JOHNSON, USA • MATT GILLIS

How do you integrate, produce, and support systems that use rapidly changing technology, but also evolve to meet the soldier's needs for today, tomorrow, and for the next two decades? As the acquisition manager and integrator for all items worn or carried by the soldier, U.S. Army Project Manager Soldier Systems, known as PM Soldier Systems, is facing this difficult question.

Soldier Systems Architecture

PM Soldier Systems employs a "System of Systems" approach combined with an expandable architecture. This provides plug-and-play functionality for sensors, weapons, electronics, and soldier equipment. Our current activities center on developing a Soldier Systems Architecture "Framework" that defines external interface relationships, establishes system modularity, and specifies interfaces among individual modules that are integrated into the systems to satisfy soldiers' needs.

We use metrics that assess successful integration of components into a weapons platform centered on the soldier. Weight carried by the soldier is one of these metrics. As shown in Figure 1 (p. 100), many components were developed over the years, each optimized to provide essential functions to the soldier on the battlefield. But total weight carried by the soldier was a by-product, not a metric.

Johnson is the Program Manager, Soldier Systems, Ft. Belvoir, Va. Gillis is with BRTRC Technology Research Corporation providing system-engineering support to PM Soldier Systems.

Illustrations by Air Force Staff Sgt. Scott Miller

The result is that the soldier's combat load, depending on specific missions, has grown to more than 92 pounds.

Our long-term goal is to integrate the soldier's ensemble and mission components, incorporating the products of science and technology efforts, along with developments in the commercial sector. The fully integrated warrior system increases infantry soldier capabilities and meets program metrics for weight, space, balance, power, and reliability at a reasonable cost.

Soldier Systems evolution depends on future technology such as faster low-power computer chips, improved materials, and new ballistic protection. By close coordination with the research and development community, market analysis of commercial technologies, and focused emphasis on communicating key requirements, we plan to leverage change as it occurs.

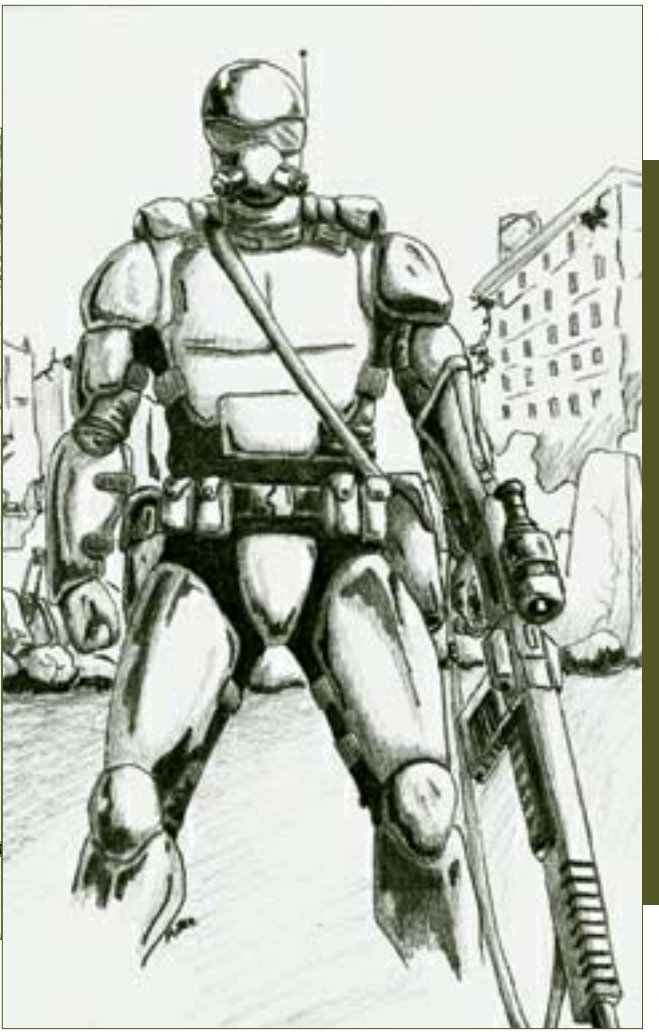
Relying on cutting-edge technology generally places the responsibility for module design, development, and conformance testing in the hands of industry. The supporting acquisition strategy employs performance requirements and thorough testing to select updated modules for the evolving systems.

More on Architectures

Since 1998, PM Soldier Systems has moved aggressively to implement Open Systems into the initial Soldier Systems Architecture. We know that the architecture framework changes more slowly than the design solutions and technology of individual modules. Open Systems use widely available and consensus-based interface standards as part of the system framework. Advantages are that a wide selection of market-based components are available, plus economy of scale and commercial sector technology advances can directly address sustainment and obsolescence. Existing government items and legacy components use adapters to interface with the architecture, when needed.

Significant thought and effort went into the conceptual design and decisions as-

sociated with the architecture. We examined a variety of alternatives for meeting interface performance levels and conducted analysis to forecast the longevity of open interfaces. The result is a system architecture that is best viewed as a multi-dimensional figure, of which a portion is depicted on the next page (Figure 2).



The Soldier Systems Architecture includes user needs—the functional architecture—on the front face of each cube. The physical architecture—system modularity—can be related to each element of the functional architecture and is shown on the top of each cube depicted in Figure 2.

Corresponding technical architecture interfaces, shown on the right side of the cube, apply to every module. The horizontal plane forms the physical architecture, while the other two planes define the functional and technical architectures. The total three-dimensional representation is a Soldier Systems Architecture that meets user requirements, incorporates modularity, and uses Open Systems interfaces.

Functional Architecture

User needs are the starting point for developing the Soldier Systems Architecture.

PM Soldier Systems' long-term goal is to integrate the soldier's ensemble and mission components, incorporating the products of science and technology efforts, along with developments in the commercial sector. The fully integrated warrior system increases infantry soldier capabilities and meets program metrics for weight, space, balance, power, and reliability at a reasonable cost.

Currently, the needs of the infantry soldier addressed by the Land Warrior system (shown in Figure 3, p. 101) are leading a set of similar "platforms." Users are developing or identifying requirements in other combat "domains," including armor, aircraft, special operations, medic, combat engineer, and artillery. Support-type requirements are also being refined for platforms in areas such as maintenance and logistics.

The Soldier Systems functional architecture identifies a set of requirements that, when grouped, provides significant benefits to the acquisition process. Managing a set of functions and the modular solutions for those requirements allows us to minimize stovepiped development efforts for multiple systems, reduces procurement cycle time through module reuse, and allows common sustainment concepts.

Identifying Common Functions Across Multiple Platforms

Organizing the functional architecture considers the degree of commonality across different warrior platforms. This effort will produce significant payoffs in terms of dollars, time, and life cycle support. Further, it can be expected to streamline activities such as safety and security certifications. Many of these functions apply to several warrior platforms illustrated in Figure 4, p. 1-1.

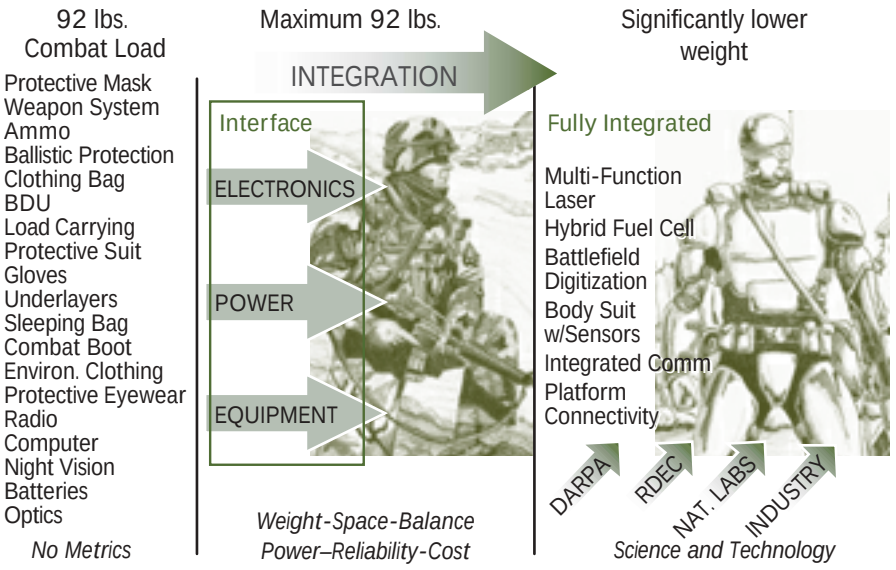
As shown in Figure 4, core functions are part of all warrior platforms. While common functions apply to many of the platforms, a set of unique functions applies only to individual platforms. By concentrating first on satisfying the core functions, we can obtain the maximum benefits.

The functional architecture and degree of commonality help us identify areas first in line for the next step—establishing elements in the physical architecture. Some of these core functions are communications, information handling, sustainability, user interface, environmental protection (uniforms), electrical power, and training.

Establishing Modularity for the Physical Architecture

The next step involves developing a physical architecture of hardware and software elements. Following that, we select the interfaces for these modules. Logistics concepts, use of existing government or commercial items, and potential for reuse all affect module-partitioning decisions.

FIGURE 1. The Soldier As a Weapons Platform



Establishing the level of modularity is one of the most difficult parts of the Soldier Systems Architecture development process. A highly integrated multi-purpose and multifunction package is an attractive solution. This alternative increases system complexity, but tends to reduce production costs. It will create a supportability nightmare when internal parts fail.

On the other hand, a highly modular solution increases weight and requires additional connectors, cables, and other interfaces. This will increase production costs, may reduce sustainment costs, and can create an integration challenge.

The degree of modularity and number of interfaces must be considered in terms of our system metrics of power, weight, space, and reliability. The challenge is to achieve a happy medium with functions distributed across a manageable set of modules. This is where the functional architecture can help. By orienting partitioning with the core functions in mind, we obtain modules that directly relate to all platforms. These modules have a high potential for reuse. Other modules can be grouped to support common functions, producing modules that have good reuse potential.

When core and common functions aid module partitioning, economy of scale will give us a set of reasonable cost components within the constraints of the sustainment concept. The number of interconnects must not adversely impact weight, bulk, and reliability. Software modularity, which is part of this decision process as well, directly affects the complexity of future modifications and the software portability to multiple platforms.

The Work Breakdown Structure (WBS) captures our physical architecture decisions. It defines the subsystem modules and major components that relate to user requirements in the functional architecture. The following list includes WBS items typical of those that contribute toward core Soldier Systems functions:

- Uniforms, Clothing, and Individual Equipment
- Data Processing
- Voice and Data Communications
- Position Determination and Navigation
- Power
- Software Operating System
- Software Application Modules
- Input, Output, and Controls.

After developing the physical architecture, the next step is selecting interfaces for the system modules. The technical architecture defines these relationships.

Technical Architecture

The official definition for technical architecture is spelled out in *DoD Joint Technical Architecture* 3.1, dated March 31, 2001, which states that a technical architecture is:

> "… A collection of the technical standards, conventions, rules, and criteria organized into profile(s) that govern system services, interfaces, and relationships for particular systems-architecture views and that relate to particular operational views."

The technical architecture provides a means to achieve interoperability among different platforms and systems. DoD

FIGURE 2. Multi-Dimensional Architecture

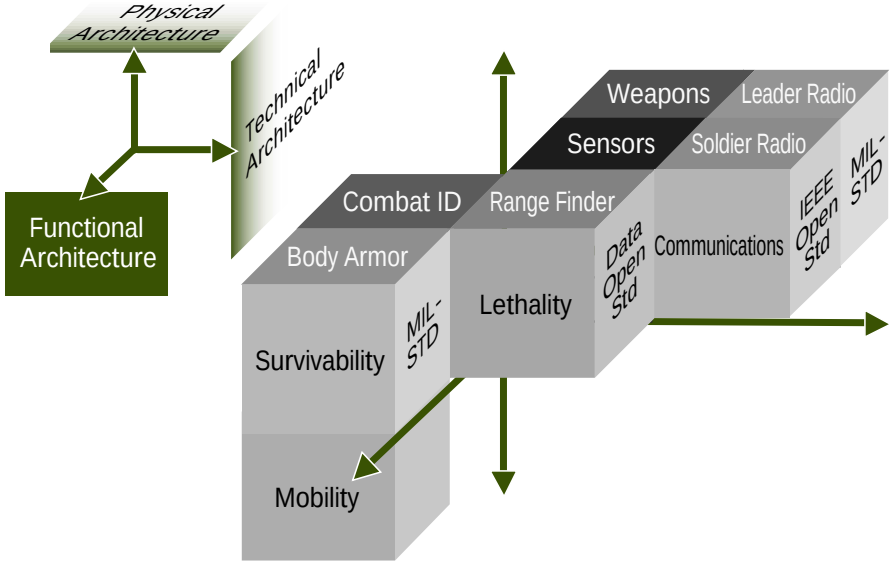


FIGURE 3. Land Warrior

created the Joint Technical Architecture (JTA) to define a minimum set of interface standards and development guidelines for acquisition programs. The Army developed the JTA-Army (JTA-A), to assure interoperability for Joint and Army programs that electronically produce, use, or exchange information.

The Soldier Systems Technical Architecture defines interfaces, both external and internal, that connect the system, subsystem modules, and in some cases, the internal components. These interfaces are part of the system requirements and also constrain the design efforts by pre-selecting module interfaces.

The interoperability-related guidance in the JTA and JTA-A are only a part of the Soldier Systems Technical Architecture. The JTA provides choices for Human-to-Computer, Data Transfer, Information Processing, and Information Security activities. Categories of mandatory and optional emerging standards include military and open systems interfaces associated with exchanging information.

The Soldier Systems Architecture takes these into account, but goes beyond information exchange. We are concerned with issues typical of the following:

- What is the physical mounting for modules on the soldier's load carrying equipment?
- How do we mount sensors on government-supplied weapons?
- What should our user interface control look like?
- Can we use common connectors, and what should they be?
- If the soldier interacts with a menu screen, can it be standardized?
- How can we adapt to legacy components, modules, and external systems?

Interface Selections

Physical architecture partitioning must be underway before selecting interfaces for the technical architecture. We define appropriate interfaces to the level of the lowest WBS element. Further, lower-level internal interfaces are part of the design process and are not captured in the technical architecture. For our interface selection, we use available open systems interfaces, where appropriate. In other cases, we use JTA-mandated standards. Some interfaces may be military-specific, especially where legacy components are system modules. The goal is to establish a set of interface standards that meets a broad performance range to permit future growth, while applying a single technical architecture to multiple platforms. The following interface standards are examples of those used in the Soldier Systems Technical Architecture:

Physical

Weapon Mounts—MIL STD 1913 (Picatinny Rail)

Logical

Transmitted Messages—Joint Variable Message Compatibility

Data Interface—Universal Serial Bus V1.1

Legacy—Ethernet 10/100 Base T, RS-170, RS-232/422

Electrical

Power—DCV 8-28 input, 110/220VAC 50/60 Hz (with adapter)

Human Factors

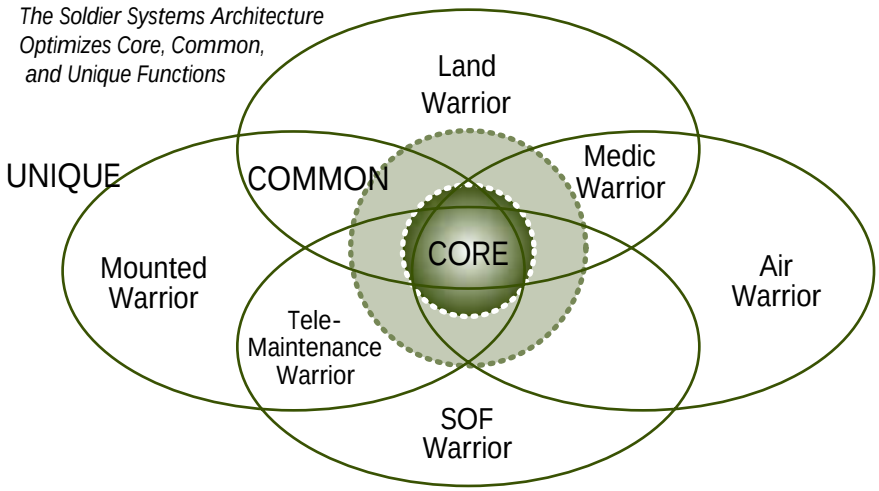
Map Symbols—MIL STD 2525B Common Warfighting Symbology (augmented)

Soldier Systems Supplement to *Army Human Computer Interface Style Guide.*

Architecture Coordination

The Soldier Systems Architecture—composed of functional, physical, and technical elements—is being used for warrior platforms now in development. The technical architecture interfaces represent our best estimates for long-lived standards that form the framework for all warrior platforms. These interfaces are key to the plug–and-play system evolution strategy.

FIGURE 4. A System of Systems



Other Army and government programs develop equipment that is part of the modular physical architecture. One additional aspect of managing the architecture is coordination with these external agencies and suppliers.

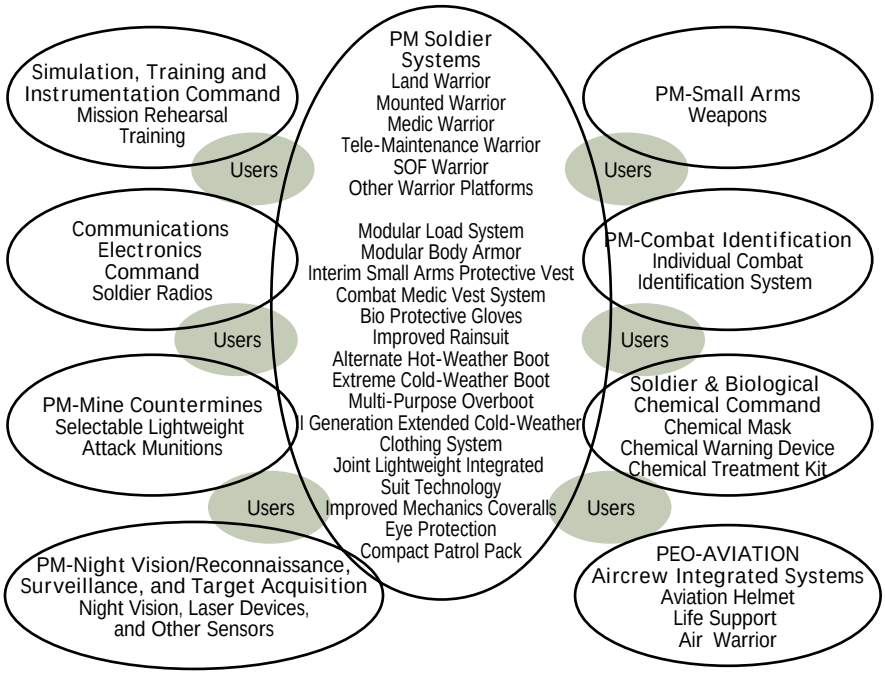
For example, PM Night Vision continually develops new sensors with potential application across warrior platforms. If we intend to incorporate new night vision sensors, the plug-and-play concept only works when the producer uses interfaces consistent with our technical architecture. Other requirements, such as the need to remove self-contained batteries and plug into warrior platform central power, are design issues. We cannot operate in a vacuum, but must be proactive, working with warrior platform users, government development agencies, and commercial suppliers.

Figure 5 lists some of the many agencies involved in this process. PM Soldier Systems is now coordinating the technical architecture. When the work is complete, we plan to update the Soldier Systems Annex in the JTA-Army.

The Evolving Soldier Systems Architecture

Our Soldier Systems Architecture can be fully coordinated and documented, but it will never be finished. We recognize that change will always be a factor. The functional architecture evolves with each newly identified user requirement or new warrior platform. This drives reevaluation of the physical architecture.

FIGURE 5. Soldier Systems Integration Challenge



Physical architecture changes, along with advances in technology and marketplace developments, will cause us to re-examine the technical architecture as time goes by.

With this in mind, we can now answer the question posed at the beginning of this article. We expect that the system interfaces will have much longer life spans than the materials, processes, and designs of system modules. However, there will come a point when we must migrate to new technical architecture interfaces for Soldier Systems platforms that support the Army's Interim Brigade Combat Team, and ultimately, Objective Force Warrior. This should not be wholesale change, but an evolutionary process. The functional, physical, and technical elements of the Soldier Systems Architecture—combined with users' key performance parameters and our metrics of weight, power, space, balance, reliability, and cost—will guide the process.

Editor's Note: The authors welcome questions or comments on this article. Contact Johnson at *tjohnson@pmsoldier.belvoir.army.mil*; Gillis at *mgillis@pmsoldier.belvoir.army.mil.* More information on technical architectures is available on the Web at *http://www.jta.itsi.disa.mil/.*

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"Breaking Down" The Work Breakdown Structure

The WBS is the Beginning of Everything Else in the Acquisition Process

JAMES J. CLARK • PHILIP D. LITTRELL

A WBS is a product-oriented family tree, composed of hardware, software, services, data, facilities, testing, and everything else resulting from a system engineering process. Whenever an organization has a large project to manage—whether organizing a picnic for several hundred people or developing a major weapon system—breaking down the effort into manageable parts is the first step.

DoD and large commercial contractors use a specific format, called a Work Breakdown Structure (WBS), to organize the breakdown of work into small areas and parts. Organized as a hierarchical structure, the WBS depicts a relationship between the largest and the smallest elements.

WBS Types

There are two types of WBS: *Program* WBS and *Contract* WBS. In the Program WBS, the government develops Levels 1 to 3. In the Contract WBS, the contractor develops all levels below Level 3. Developed prior to program initiation, the Program WBS encompasses the entire overall effort (big picture) of the program. To illustrate, Figure 1 represents a very simple WBS—a diagram of a new house (to be constructed).

Level 4 and below would represent the beginning of the Contract WBS. The Contract WBS is developed by the contractor and covers all of the products and services that the contractor is responsible to produce and perform. Contractors will take the government's Pro-

The B-2 Bomber, with its unique flying wing configuration, was designed as a highly versatile multi-role bomber, capable of delivering both nuclear and conventional munitions. Over 200 Configuration Items were identified on the Work Breakdown Structure for the B-2. The advanced state of stealth technology (materials and manufacturing process) used on the aircraft required extra attention by the program management team. Over 900 new manufacturing processes had to be invented to develop the B-2.

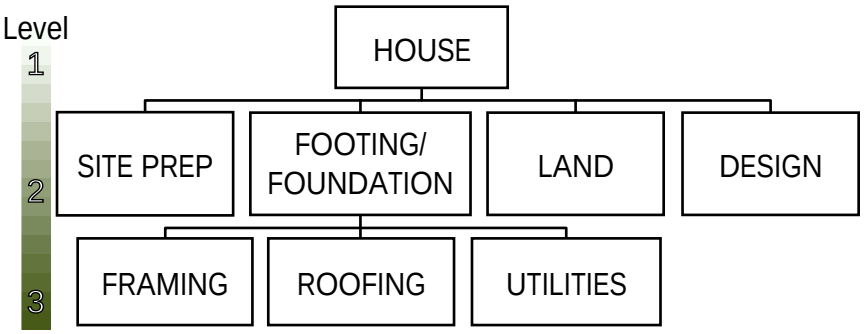
Clark is an adjunct professor for Florida Institute of Technology, Fort Lee, Va. Littrell is a professor at the Fort Lee Center, DAU Mid-Atlantic Region, Fort Lee, Va.

Photo courtesy Boeing Media

gram WBS and extend the effort down (in the form of the Contract WBS) to whatever level they believe is necessary to make a realistic bid on the contract and manage the work effort on the program. They will break each element down into further levels of detail until they reach the level of work packages, which are portions of the project that will determine cost accounting data in each area within the organization. Work packages typically range from 80 hours to 60 days of level of effort. Details of the process are described later in this article.

Within the acquisition process, the WBS is used on several occasions throughout a system's life cycle. Regardless of the life cycle model, the WBS applies to all acquisition models.

FIGURE 1. Program WBS



Early in the acquisition process, the WBS is a "strawman" of a proposed program WBS. As the program develops and other documents provide further guidance, the WBS takes shape into a real object. A notional design for an early prototype eventually evolves into a refined engineering effort. The WBS creates this notional structure to help the manufacturer work toward a design and eventually prepare for production.

In certain instances, depots will bid on a contract and also will be required to submit a Contract WBS. Depots would be expected to generate the same level of information as any other contractor to realistically bid and manage the work effort.

The Contract WBS usually starts off with a Level 3 element from the Program WBS to ensure continuity. For example, in our Program WBS for the house (Figure 1), one of the Level 3 elements was the framing. The Contract WBS would divide the framing into components (such as the wall framing, ceiling framing, floor framing, and interior framing). Each of these areas would be further subdivided into smaller and smaller parts. The program and contract WBS must be consistent with one another; and any revisions to one must be reflected in the other.

Obviously, Figure 1 does not show everything used in the construction of a house—the drawing would be too massive for this page. So, realize that all entities of the house (e.g., blueprints, labor and materiel cost, paint, nails, subcontractors' work) are actually shown in a WBS, but not for this particular illustration.

Now, consider a Program WBS for an aircraft system (Figure 2). Like our WBS in Figure 1, the aircraft system has three levels in a Program WBS. Directly below the Program WBS appears a Contract WBS.

At the top (Level 1) is the overall project—the aircraft system. Level 1 is usually directly identified as a major program; a PPBS [Planning, Programming, and Budgeting System] program element; or as a project or subprogram within an aggregated program.

The second row (Level 2) is a general breakout of the parts and activities associated with the aircraft system. Level 2 elements are major elements of the defense materiel item; for example, the vehicle itself (the prime mission product, which includes all hardware and software elements), aggregations of system-level services (e.g., systems test and evaluation, system engineering, program management), training, and data.

The third level (Level 3) further breaks down the components into more detailed levels. Level 3 elements are elements subordinate to Level 2 major elements such as airframe, propulsion, and fire control type of service (e.g., developmental test and evaluation, contractor technical support), or types of data (e.g., technical publications). Level 3 elements are generally common across similar programs. Lower levels follow the same process.

In rare circumstances, the Program WBS can extend below Level 3. However, these circumstances would be in cases where the government believes that a critical management effort is necessary to control the program. Otherwise, dic-

tating a contractor to go below three levels could result in litigation against the government if the development goes poorly.

Defining the Program

The WBS is used primarily during the development and production of defense systems. Large commercial companies also use the WBS when developing complex systems. For example, Boeing used the WBS to link their Integrated Product Teams, called Design Build Teams (DBTs) with established design goals. Boeing's 238 DBTs directly corresponded to major elements in the WBS. Each DBT had a specific design goal assigned by management.

The WBS is intended to completely define *everything* in the program. A WBS displays and defines the products(s) to be developed or produced and relates the elements of work to be accomplished to each other and to the end product. Therefore, the WBS plays a significant role in planning and assigning management and technical responsibilities; and monitoring and controlling the progress and status of engineering efforts, resource allocations, cost estimates, expenditures, and cost and technical performance.

Providing a logical framework for specifying the technical objectives of the program, the WBS first defines the program in terms of hierarchically related, product-oriented elements and the work processes required for their completion. Each element for the WBS provides logical summary points for assessing technical accomplishments, and for measuring the cost and schedule performance accomplished in attaining the specified technical objectives.

For each WBS element, the detailed technical objectives are defined as well as the specific work tasks assigned to each contractor organization element; and the resources, materials, and processes required to attain the objectives.

As resources are employed and work progresses on the task, current technical, schedule, and cost data are reported. The task data may then be summarized to provide successive levels of management with the appropriate report on planned, actual, and current projected status of the elements for which they are responsible. Management will thus be better able to maintain visibility of status and to apply their efforts to assure desired performance.

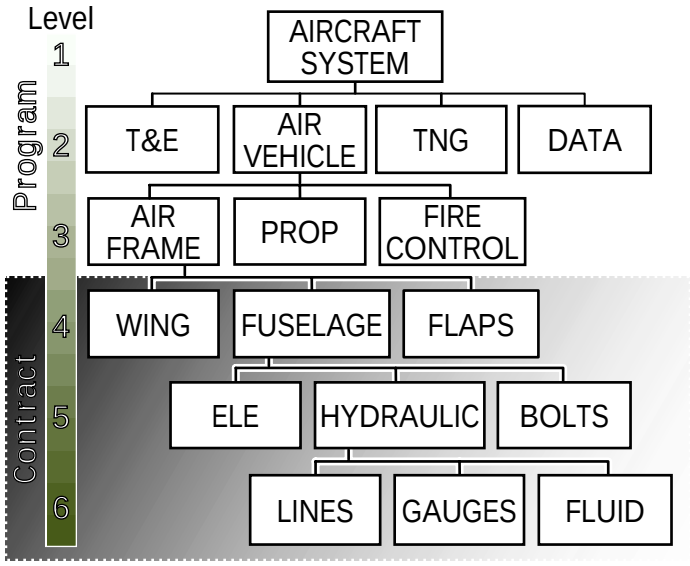
The WBS is: 1) identified on the Contract Data Requirements List (CDRL); 2) included with the Statement of Work (SOW); and 3) submitted as part of the draft Request For Proposal (RFP).

The format for developing a WBS is provided in Military Handbook 881 (MIL-HDBK-881), formerly Military Standard 881B (MIL-STD 881B), which contains a format for the seven types of systems. In developing the Contract WBS, MIL-HDBK-881 shall be cited "for guidance only" in solicitations and contracts.

- Missile System
- Ordnance System
- Ship System
- Space System
- Surface Vehicle System
- Aircraft System
- Electronic/Automated Software System

Figure 3 is an overall depiction of the relationship of the WBS to the contractor work effort.

FIGURE 2. Program and Contract WBS



Because it is an evolving document that represents a snapshot in time, the WBS does not end here. The WBS is the *beginning* of everything else in the acquisition process. For example, the WBS plays an important role in configuration management. Configuration Items (CIs)—also called Computer Software Configuration Items (CSCIs), or Software Items (SIs)—are initially identified by the PM and marked on the WBS. The CIs are an aggregation of hardware or software items that are risky to manufacture, new technology, potential safety problems, or are politically sensitive.

For example, the WBS for the B-2 Bomber identified over 200 CIs. The advanced state of stealth technology (materials and manufacturing process) used on the B-2 required extra attention by the program management team. Over 900 new manufacturing processes had to be invented to develop the B-2.

Private industry often refers to the WBS as Scope Definition. Scope Definition is defined as the customer's deliverables that are reflected in the WBS. The deliverables are ultimately verified by the stakeholders through reviews and audits—the same as DoD. Outside DoD, the WBS is often referred to as the Project WBS (PWBS), Contractual WBS (CWBS), Organizational WBS (OWBS), or Resources WBS (RWBS). Each of these WBS entities performs distinct functions.

Not Exclusively a Scheduling Tool

Although the WBS can be used for developing a schedule, it is not *exclusively* a scheduling tool. Within the WBS, a cost account matrix is also developed that relates functional organizations to the WBS elements. A logical numbering system is used on the WBS to keep track of all the WBS elements. This numbering system is typically referred to as the Code of Accounts. The code of accounts normally displays the relationship between the cost account and the work package. The cost account code is one level above the work package and is used for cost reporting purposes. An example of this relationship follows:

	Cost Account Code
Cost Account (Summary Activity or Parent)	1.4.3
Work Package (Child)	1.4.3.1

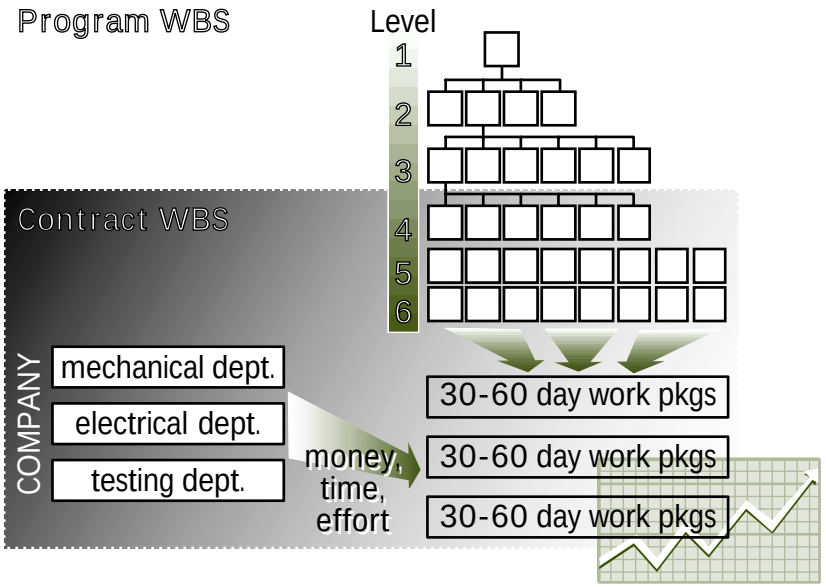
Note the numeric relationship between parent and child. The work package simply adds a digit to the original cost account number. Network diagrams are ultimately derived from these work packages. Again, work packages normally range from 80 hours' level of effort (not in duration) to 60 calendar days. The WBS provides the structure for the efforts of contracting, cost accounting, manufacturing, engineering, testing, and logistics. Also, the WBS is a form of network that ultimately addresses risk vs. time.

Various government and commercial tools exist that use the WBS structure to convey risk and schedule data. The Program Manager's WorkStation (PMWS) is an excellent automated tool to track and manage risk. Another good example of the risk management effort is the resulting Program Evaluation and Review Technique (PERT) and Cost Performance Measure (CPM) information generated from the WBS to develop a schedule and depict critical paths. Automated tools such as Microsoft Project are also very useful to convey a multitude of scheduling configurations.

The WBS will continue to be a useful tool in commercial industry and the DoD acquisition process. Program managers will continue to use the WBS to help with cost, schedule, performance, manufacturing, logistics, testing, and risk management. More importantly, the customer will continue to get a cost-effective and better product as a result of the WBS.

Editor's Note: The authors welcome questions or comments on this article. Contact Clark at *clarkj@lee.army.mil*; contact Littrell at *Philip.Littrell@dau.mil.*

FIGURE 3. WBS Transition to Work Packages



DAU Welcomes Back Former Commandant, Claude M. Bolton Jr.

Claude M. Bolton Jr., former Commandant of the Defense Systems Management College (DSMC), returned to the College Feb. 13—his first official visit to the Defense Acquisition University (DAU) since appointment by the President to his new position as the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA/ALT).

Bolton was invited to the University as a Distinguished Guest Lecturer for students attending DAU's Advanced Program Management Course (APMC 02-1). During his remarks, he talked about programs, people, and production; and discussed key Army programs in development, DoD limited funding levels, and ASA/ALT organizational changes. His focus was on how to improve management and support the troops with limited funding.

Bolton served as DSMC's 12th Commandant from March 1993 to March 1996.

Editor's Note: Also see press release on p. 42, "Claude M. Bolton Jr. Sworn-in as New Assistant Secretary of the Army for Acquisition, Logistics and Technology."

Assistant Secretary of the Army for Acquisition, Logistics and Technology Claude M. Bolton Jr., lectures students of the Defense Acquisition University's Advanced Program Management Course (APMC 02-1) on Feb. 13, 2002, at Scott Hall, Fort Belvoir, Va. Photo by Army Sgt. Kevin Moses

DEPARTMENT OF DEFENSE NEWS RELEASE

Details of Fiscal 2003 DoD Budget Request

The President's budget proposes $369 billion for the Department of Defense, plus $10 billion, if needed, to fight the war on terrorism—for a total of $379 billion. The budget fulfills President Bush's pledge to win the war against terrorism, defend America and its people, improve quality of life for our men and women in uniform, and accelerate a bold transformation of the U.S. military to counter 21st century threats.

The War Against Terrorism

Of the approximately $9.4 billion that the President added to strengthen U.S. capabilities for fighting the war against terrorism, included is:

- $3 billion for counter-terrorism, force protection, and homeland security.
- $1.2 billion for continued air patrols over the United States.
- Added funding for munitions, communications, and other critical needs.

Major Transformation Initiatives

The budget continues to modernize U.S. forces with the latest technology and funds programs that will transform the way those forces fight in the future. The budget includes $68.7 billion for Procurement—over 10 percent real growth—with Procurement projected to increase to $98.9 billion by FY 2007. For Research, Development, Test and Evaluation (RDT&E), the request totals $53.9 billion—a nearly 10 percent real increase over 2002. The budget advances a number of transformation initiatives, including:

Missile Defense. $7.8 billion for a broad-based research, development, testing, and procurement effort aimed at deployment of layered missile defenses as soon as feasible, and $815 million for space-based sensors that can detect missile attacks.

Ground Forces Transformation. $812 million to procure 332 Interim Armored Vehicles, $707 million to advance the Future Combat System, and $911 million for ongoing development of the Comanche reconnaissance helicopter.

SSGN Conversion. $1 billion to begin conversion of four Trident ballistic missile submarines to submarines, each capable of carrying more than 150 Tomahawk cruise missiles and a contingent of special operations forces.

Unmanned Vehicles. $1 billion to increase the development and procurement of Global Hawk, Predator, and other unmanned vehicles.

DD(X). $961 million to develop revolutionary stealth, propulsion, and manning technologies for a new family of surface combatants.

Precision Munitions. $54 million to develop the Small Diameter Bomb, $146 million for the Tactical Tomahawk cruise missile, and $1.1 billion for a higher rate of production for the Joint Direct Attack Munition (JDAM) and Laser Guided Bombs.

Space Programs. $920 million to continue development of the Advanced Extremely High Frequency Satellite Communications System, $91 million for development of the Space Based Radar, and $88 million for advancing promising space control initiatives.

Other Procurement and RDT&E

The budget continues to modernize existing forces. The budget includes:

Tactical Aircraft. $4.6 billion for procurement of 23 F-22 aircraft and advance procurement of 27 F-22 [aircraft] in FY 2004; $3.5 billion for Joint Strike Fighter development; and $3.1 billion to support procurement of 44 F/A-18E/F aircraft.

Mobility Aircraft. $4.0 billion for the C-17—primarily for acquisition of 12 aircraft—and $334 million for four KC-130J aircraft to improve Marine Corps air refueling capabilities.

V-22. $2 billion for a restructured V-22 tilt-rotor aircraft program, including $497 million to correct technical problems and to conduct rigorous flight tests.

Shipbuilding. $8.6 billion and procurement of five ships: two DDG-51 destroyers and one each Virginia Class submarine, LPD-17 Transport Dock Ship, and T-AKE Dry Cargo Ship.

Chemical Biological Defense. $465 million added, including $300 million for better capability to de-

tect, mitigate, and respond to biological incidents.

Science and Technology (S&T). $9.9 billion—2.7 percent of the DoD topline.

Quality of Life Improvements for Men & Women in Uniform

The 2003 budget funds quality of life improvements for military personnel including:

- A 4.1 percent increase in military basic pay. The Administration also is exploring options for additional pay raises for mid-grade officers and non-commissioned officers.
- For personnel living in private housing, a reduction in out-of-pocket housing costs from 11.3 percent to 7.5 percent.
- $4.2 billion for Family Housing accounts to keep on track [in] eliminating most inadequate housing by 2007—three years sooner than previously planned.

Training and Readiness

The budget boosts funding for training and readiness to keep pace with the demands of the war against terrorism and other missions. FY 2003 funding, and corresponding increases over 2002:

- Flying Hours: $11.8 billion—up $0.5 billion
- Total Army OPTEMPO: $3.7 billion—up $0.4 billion
- Ship Operations: $2.4 billion—up $0.1 billion
- Depot Maintenance: $4.8 billion—up $0.3 billion
- Training: $10.0 billion—up $0.6 billion.

Improving the Way DoD Operates

The budget reflects:

- Over $9 billion in savings from acquisition program changes, management improvements, and other initiatives; these savings were used to fund transformation and other pressing requirements.
- Progress toward a targeted 15 percent reduction in headquarters staff.
- Continued efforts to develop, by 2003, a DoD-wide financial management enterprise architecture and transition plan to consolidate and modernize financial and non-financial business processes/systems.

Editor's Note: This information is in the public domain at *http://www.defenselink.mil/news.* Copies of Department of Defense budget documents are available at the following Internet address: *http://www.dtic.mil/comptroller/fy2003budget/*.

FY 2003 President's Budget

Projected Funding Allocations ($ Billions)

(Some columns may not add correctly due to rounding)

Budget Authority	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07
National Defense Topline (Function 050) Discretionary Funding						
DoD Military (051)*	331.2	379.3	387.9	408.8	429.6	451.4
Civilian Accrual**	3.2					
DoEnergy and Other*	16.4	16.8	17.1	17.5	17.9	18.2
National Defense (050)*	350.8	396.1	405.0	426.2	447.5	469.6
DoD Discretionary Budget Authority by Title						
Military Personnel	82.0	94.2	103.9	108.0	113.6	117.4
Operations & Maintenance	127.5	150.2	140.8	146.9	152.2	155.1
Procurement*	61.1	68.7	74.7	79.1	86.9	98.9
RDT&E	48.4	53.9	57.0	60.7	58.9	58.0
Military Construction*	6.6	4.8	5.1	6.3	10.8	13.8
Family Housing	4.1	4.2	4.3	5.1	4.9	4.8
Revolving & Mgmt Funds	1.7	3.3	2.1	2.6	2.3	3.4
Receipts & Other	-.1	-	-	-	-	-
DoD Military (051)*	331.2	379.3	387.9	408.8	429.6	451.4
Civilian Accrual**	3.2					
Total DoD (051)*	334.3	379.3	387.9	408.8	429.6	451.4
DoD Discretionary Budget Authority by Component						
Army	80.9	90.9	96.6	100.7	107.5	114.3
Navy/Marine Corps	98.8	108.3	114.7	119.9	127.0	134.0
Air Force	94.3	107.0	113.3	118.1	124.5	130.9
Defense-wide*	57.2	73.0	63.3	70.0	70.6	72.1
DoD Military (051)*	331.2	379.3	387.9	408.8	429.6	451.4
Civilian Accrual**	3.2					
Total DoD (051)*	334.3	379.3	387.9	408.8	429.6	451.4

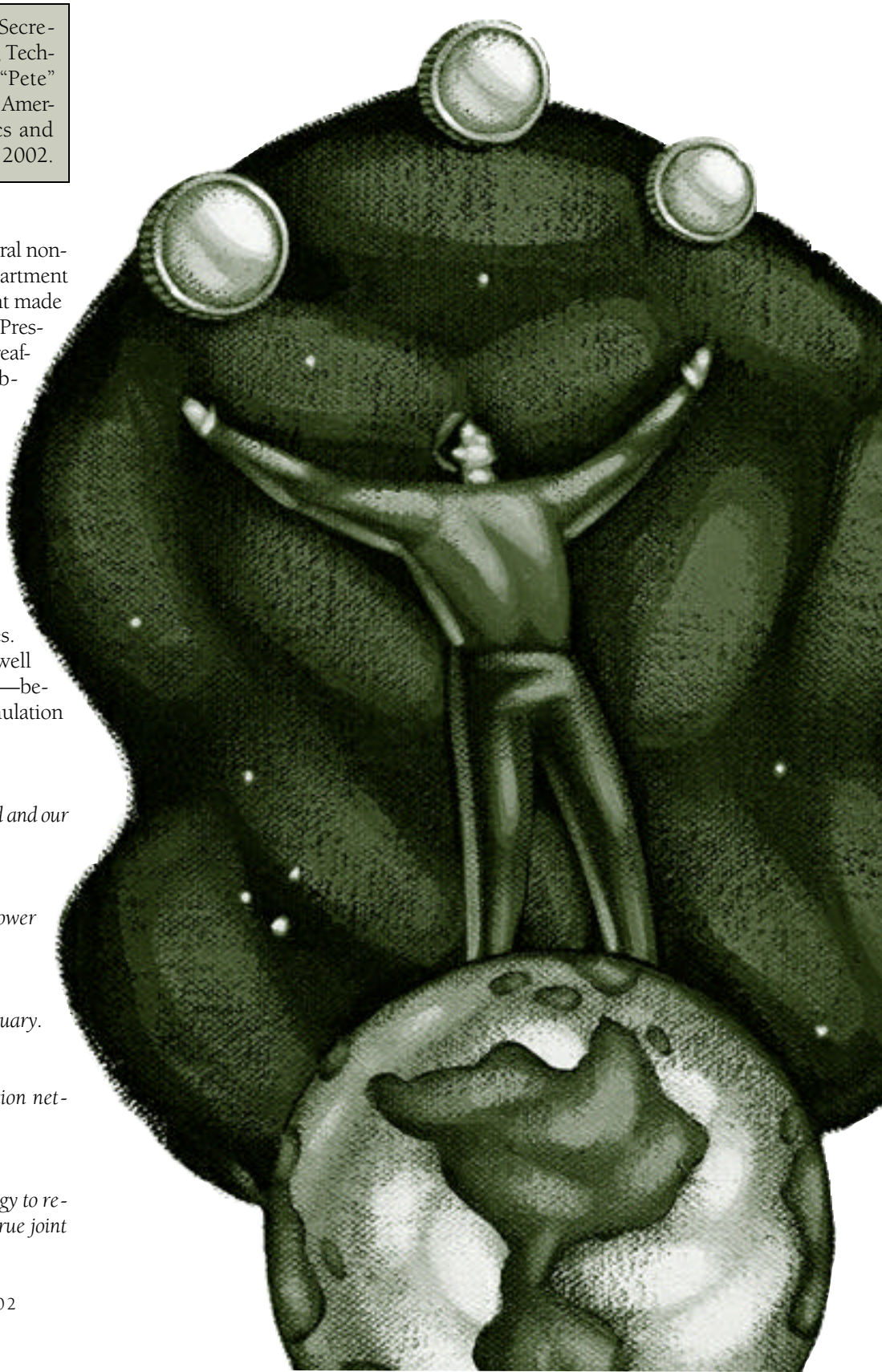
* Includes the Defense Emergency Response Fund (FY 2002-FY 2007)

** Included in DoD budget in FY 03-07; in FY 02 shown for information only.

Transformation—DoD's Central Non-War Objective

Aldridge Spells Out Six DoD Transformation Goals

Opening remarks by Under Secretary of Defense for Acquisition, Technology and Logistics E.C. "Pete" Aldridge Jr., in a speech to the American Institute of Astronautics and Aeronautics (AIAA), Feb. 19, 2002.



Transformation is the central non-war objective of the Department of Defense. The President made it a critical feature of his Presidential campaign, and reaffirmed his commitment to that objective in a speech from the Citadel last December. Among other things, he characterized our need to transform as the military and moral necessity of our time. And he described our task as the "redefinition of war on our terms."

We *will* transform our defenses. Indeed, that transformation is well under way. It started last year—before the attacks—with the formulation of six transformational goals:

1

First, to *protect the U.S. homeland and our bases overseas.*

2

Second, to *project and sustain power in distant theatres*.

3

Third, to *deny our enemies sanctuary*.

4

Fourth, to *protect our information networks from attack.*

5

Fifth, to *use information technology to realize the power and potential of true joint warfare*.

6

And sixth, to *maintain unhindered access to space and protect our space capabilities from enemy attack*.

Those six transformational goals imply a very full plate for [AIAA's] membership.

Airlift, UAVs [Unmanned Aerial Vehicles] and UCAVs [Unmanned Combat Aerial Vehicles], air dominance, space dominance, precision guided munitions, tactical and anti-ballistic missiles—you *all* have your work cut out for you.

Our military are juggling three balls at once: fight and win a worldwide war on terrorism; restore our forces by making investments in procurement, people, infrastructure, and modernization; and prepare for the future by transforming the Defense establishment. Dropping any one of them will place the nation in peril. Balance is the key.

Transformational AT&L

The activities of my office are important to these transformation efforts. The transformation of our nation's defenses simply cannot succeed without transformational acquisition, transformational technology, and transformational logistics. The implied predicate is acquisition excellence.

In keeping with that, I too have committed my office to its own body of goals designed to make acquisition excellence a reality, and by so doing, to enable the transformation of our national defenses. These five goals each hold implications for contractors.

In short order they are:

1

Achieve credibility and effectiveness in the acquisition and logistics process. If we are ever to bring stability to our acquisition efforts, if we ever expect Congress to grant us more leeway in the management of our portfolio, we must re-build their confidence in us.

There are two major elements to the accomplishment of this goal: first, we must introduce spiral development to reduce risk and development time; and second, we must properly and realistically price our programs.

Reducing risk, maintaining schedules, and keeping costs under control are the key factors in improving acquisition effectiveness and credibility.

2

Revitalize the quality of the AT&L workforce. Many of our workers are getting older and will soon retire. We must ensure that those who remain possess the skills we will need for the future.

In addition, we would like to find a way for DoD to have access to people with industrial experience, and vice versa.

3

Improve the health of the defense industrial base. As I have said many times before, if we are to provide our military men and women with the finest equipment in the world, the industrial base that produces it must be healthy, innovative, and competitive.

To achieve this goal, we must look at our profit policy, progress payments (which we have done), savings sharing plans, and export control procedures. Our objective is not only to help our traditional contractors, but to also incentivize non-traditional contractors to do business with DoD.

We also need to incentivize industry to pursue more independent research and development—the kind that gives depth, resiliency, and competitiveness to the industrial base.

Let me read you a quote from General [Dwight David] Eisenhower:

> *"The DUCK, an amphibious vehicle, proved to be one of the most valuable pieces of equipment produced by the U.S. during the war. Four other pieces of equipment that most senior officers came to regard as most vital to our success in Africa and Europe were the bulldozer, the jeep, the two-and-a-half ton truck, and the C-47 airplane. Curiously enough, none of these is designed for combat."*

Healthy industry—even industry not directly related to combat weapons systems—is in our national security interests.

4

Rationalize our weapons systems and infrastructure with our national defense strategy. Both detractors and supporters of our transformation efforts have expressed reservations about our recently released budget priorities. The charges span the gamut from "not transformational enough," to "too much too soon."

What seems to characterize both extremes is, first, an inability to separate transformation from appropriations. And second, an inability to understand that transformation is a journey, not an end state.

Let me be clear: Transformation is *not* a reflection of dollars spent. Nor is it the mere expression of technology. Transformation is first and foremost a state of mind.

Certainly, it cannot succeed without appropriations. But, as I said earlier, it is

well underway, and was so long before the current budget was signed. Here is what we have been up to:

- We have dispensed with the antiquated "Two Major Theatre War" policy.
- We have replaced the half-century old "Threat Based Strategy" with a "Capabilities Based Strategy."
- The recently released "Nuclear Posture Review" has put all on notice that no policy, regardless of antiquity, pedigree or constituency, is immune from re-thinking. Not even one as venerable as Mutually Assured Destruction.
- Withdrawal from the ABM Treaty will take the hobbles off our BMD [Ballistic Missile Defense] program.
- We are using current systems in transformational ways, such as B-52s in a close air support role.
- For my part, we have begun to establish fiscal and programmatic credibility. For the first time ever, Nunn-McCurdy has been enforced, not just to the benefit of the taxpayer, but to the benefit of Ballistic Missile Defense.
- And we are mandating spiral development, and proper pricing of programs.

But the current budget also has things for those visionaries who cannot see past the dollar sign.

- We canceled DD-21 [Navy Land Attack Destroyer] because it was simply not transformational enough.
- We will be spending sizable amounts of money on space dominance, information dominance, UAVs, and UCAVs.
- We will be refitting four SSBNs [Ship, Submersible, Ballistic, Nuclear (Submarines)] as conventional missile and Special Forces delivery platforms.
- The Comanche, the Interim Armored Vehicle, and the Future Combat System have been provided for.
- And as you know, we have committed not only to the F-22 and the JSF [Joint Strike Fighter], but also to Space Based Radar, and directed energy and hyper-velocity missile technology.

The character of this budget can be reduced to one word: *balance*.

As the Secretary of Defense said in testimony before Congress, our military must do three difficult things simultaneously. We must fight and win a worldwide war on terrorism; we must restore our forces by making investments in procurement, people, infrastructure, and modernization; and we must prepare for the future by transforming the Defense establishment.

> Transformation is a journey, not an end state...transformation is not a reflection of dollars spent. Nor is it the mere expression of technology. Transformation is first and foremost a state of mind.

We are juggling three balls at once, here. Dropping any one of them will place the nation in peril. Balance is the key.

Now, let me say a quick word about infrastructure: Contractors may not see why they should be interested in our efforts to dispose of excess infrastructure, but I can assure you that our motives for reducing inefficiency are identical to industry's.

The more efficient the government is, the more capital we have to expend on other programs and products that would be of greater utility. In that sense, our mutual efficiency is a mutual interest.

I share the President's disappointment that Congress chose to defer this issue until 2005.

Leveraging of technology. I need not explain the consequences of this important goal to defense contractors. It is self-evident. And all the more so these past several months.

As I mentioned, we hope to accelerate UAV and UCAV R&D [Research and Development]. We will be researching hypersonic vehicles, space-based radar, and a whole bevy of other technologies and systems. There is much opportunity here for contractors to secure support for good ideas. Science and technology activities form the base for the second generation of transformation.

Abandoning the Comfortable and Familiar

The realization of acquisition excellence, like the over-arching goal of transformation, will require that we embrace some change in the way we do business. The watchwords are speed, agility, flexibility, and innovation.

If we are ever going to achieve acquisition excellence, if we are ever going to truly transform our national defenses, we simply must abandon the comfortable and familiar. There is no better time than now.

I am confident we will all learn from each other. And I am sure that what we learn will be of great use as we strive for the twin goals of national security transformation and acquisition excellence.

Editor's Note: This information is in the public domain at *http://www.acq.osd.mil/usd/index.html#speeches*.

DAU Guidebooks Available At No Cost to Government Employees

The Falcon and the Mirage: Managing for Combat Effectiveness

Author: *B.A. "Tony" Kausal*
Publisher: *DAU Press (November 2001)*

Great differences exist between France and the United States in the ways each nation acquires new weapon systems. Some differences are cultural; others are a difference in organizational or management style. Much can be learned from recognizing those differences and gauging the results they have on meeting milestones and producing successful programs.

This guidebook examines the French Ministére de la Défense and the Délégation Générale pour l'Armement (DGA) and compares and contrasts each agency to the U.S. acquisition structure, and the ways each interacts with Defense industry. The author examines the System Program Offices of each country, and gives his insights based on years of experience with the U.S. Air Force and his recent assignment as part of a professional exchange between the Defense Acquisition University (where he was the Air Force Chair in the DAU Executive Institute), and the Centre des Hautes Études de l'Armement (CHEAr) in France.

Online

An online copy is available at *http://www.dau.mil/pubs/pubs-main.asp#Online.*

Printed Copy

To request a printed copy of *The Falcon and the Mirage: Managing for Combat Effectiveness*, choose one of three options: 1) Fax a written request to the DAU Publications Distribution Center at (703) 805-3726; 2) mail your request to Defense Acquisition University, Attn: AS-CI, 9820 Belvoir Road, Suite 3, Fort Belvoir VA 22060-5565; or 3) e-mail *jeff.turner@dau.mil*.

The Fourth Estate: The Impact of Mass Communications on Defense Systems Acquisition Decision Making

Author: *Robert F. Delaney*
Publisher: *DAU Press (January 2002)*

This guidebook examines Department of Defense Policy and gives an overview of the acquisition process in relation to Public Affairs and the Media. It delves into the historical background of the Press and Media in the United States and the rise of adversarial media-government relations. It also discusses the rise of mass communications in America and the impact of mass media on American culture and politics. It examines the media and the political process, including polls and lobbying. It also discusses media techniques and the future of information technology, including cyber warfare. It investigates national security, public policy, and public opinion using real-world examples from the White House, Congress, and the Pentagon. Finally, it discusses decision making in the Age of Instant Communications—how to relate to the Media and Program Managers, and how to include Media planning in Acquisition decisions.

Online

An online copy will soon be available at *http://www.dau.mil/pubs/pubs-main.asp#Online.*

Printed Copy

To request a printed copy of *The Fourth Estate: The Impact of Mass Communications on Defense Systems Acquisition Decision Making*, choose one of three options: 1) Fax a written request to the DAU Publications Distribution Center at (703) 805-3726; 2) mail your request to Defense Acquisition University, Attn: AS-CI, 9820 Belvoir Road, Suite 3, Fort Belvoir VA 22060-5565; or 3) e-mail *jeff.turner @dau.mil*.

Understanding the Program Manager's Role

Defense Systems Management College Develops New Course for DCMA

LT. CMDR. JOSE FERNANDEZ, USN • ARMOND DARRIN

Twenty-five Defense Contract Management Agency employees are better equipped to support program managers after completing a new course designed to expose Program Integrators and the Program Support Team to life as a program manager.

The Defense Acquisition University (DAU) developed the one-week course for DCMA last year. The most recent offering, held Feb. 25–March 1, at DCMA St. Petersburg, Fla., immersed DCMA employees in the program manager world by providing a hands-on orientation to the business and technical challenges facing program managers.

"DCMA is committed to providing the PM with high-level, quality support," said Army Brig. Gen. Edward M. Harrington, DCMA Director. "This course helps convey to DCMA professionals the challenges confronting Army, Navy, and Air Force PMs on a daily basis—and why on-site support can truly make a difference."

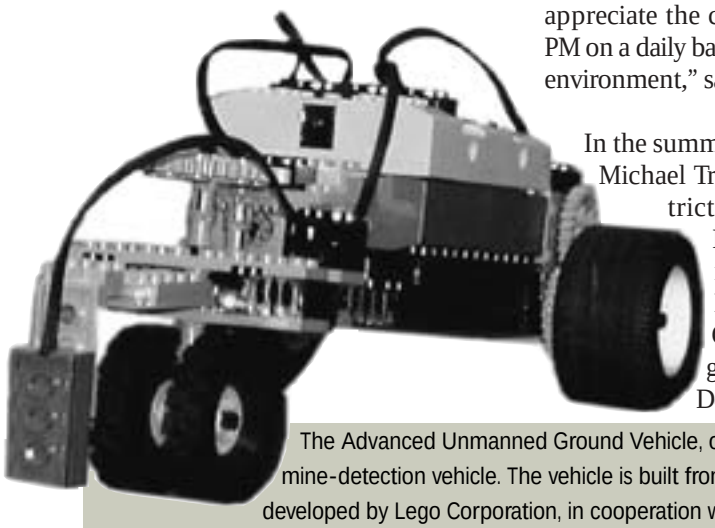
Support to the program manager is a fundamental and critical element of the overall DCMA mission. A Program Integrator is assigned to each Acquisition Category (ACAT I and II) program to focus the DCMA Program Support Team efforts on cost, schedule, and performance issues. The Program Integrator is responsible for ensuring timely insight, actions, and recommendations for the program manager to promote successful program execution.

Army Brig. Gen. Edward M. Harrington, DCMA Director (left) and Navy Capt. Michael Tryon, DCMA West District Commander, review course materials for "Understanding the Program Manager's Role"—a DSMC-developed "hybrid" course for DCMA Program Integrators and Program Support Team members. Photo courtesy DCMA

"I now have a lot better appreciation for the value of our on-site role to the program manager community," said Kat Sizemore, a Program Integrator who completed the St. Petersburg course.

DCMA teaming with the customer starts with customer engagement on Acquisition Planning and Support Services. This pre-award support ranges from acquisition strategy formulation and request-for-proposal structuring, all the way to past performance evaluations and source-selection participation. It extends throughout contract performance, beginning with a well-documented Memorandum of Agreement (MOA). The MOA identifies key program risk elements requiring special DCMA attention, as well as discrete program outcomes and sub-outcomes deemed critical by the program manager during various stages of the program.

Fernandez is assigned to DCMA Baltimore-Manassas in Manassas, Va.; Darrin is assigned to DCMA Headquarters in Springfield, Va., as a member of the DCMA Program Support Team.



The Advanced Unmanned Ground Vehicle, or AUGV is a simulated mine-detection vehicle. The vehicle is built from a kit originally developed by Lego Corporation, in cooperation with the Massachusetts Institute of Technology. Students are required to develop a concept, build it, complete software programming, and test their product against the requirements of a system specification.
Photo by Retired Navy Cmdr. Dave Brown

DAU President Frank Anderson Jr., (right) greets Army Brig. Gen. Edward M. Harrington, DCMA Director, during a recent visit by Harrington to the DAU main campus at Fort Belvoir, Va.
Photo by Army Sgt. Kevin Moses

Why Develop the Course?

To promote the proper teaming environment within DCMA, Program Integrators and Program Support Team members must fully understand the breadth of the PM's responsibilities.

"For DCMA to be value-added in the eyes of the PM, we must first internalize and appreciate the challenges faced by the PM on a daily basis in today's acquisition environment," said Harrington.

In the summer of 2000, Navy Capt. Michael Tryon, DCMA West District Commander, and DCMA Headquarters representatives met with Dr. Robert Lightsey, Chair, DAU Systems Engineering Management Department, and Dr. Martin Falk, Systems Engineering Professor, to explore developing a course for DCMA Program Integrators and Program Support Team members across the country. The course would promote a greater understanding of the program manager's responsibilities and challenges.

In short order and with superb support from Lightsey and Falk, along with Tryon and DCMA Headquarters Program Support Team members Armond Darrin and Navy Cmdr. Max Snell, the first weeklong pilot was underway.

In April 2001, Army Col. Mark Brown, DCMA Baltimore Commander, hosted "Understanding the Program Manager's Role" in Baltimore, Md. Thirty students representing multiple contract management disciplines from different DCMA field sites, along with several Program Integrators, participated in the pilot.

The Course is Hands-On

The course is technically oriented and uses a hands-on approach, as students are introduced to the systems-engineering view of program management. In-depth discussion of topics such as requirements analysis, the progression from solicitation to contract award, and project management are also part of the curriculum. Lessons learned in earned-value management, configuration management, functional analysis and design, risk management, design tools, technical reviews, and best-value trade-offs are all woven into a team project.

Each course offering consists of approximately five teams per class, and the last day includes a live-vehicle test, followed by a discussion of performance trade-offs and best-value analysis.

Building the Advanced Unmanned Ground Vehicle (AUGV)

Many educational programs use tools such as models and simulations to reinforce learning objectives. All of the technical management subjects covered in the course such as design, risk management, and technical reviews come to life by having the students actually perform them while they go through the process of designing, developing, and testing a simulated mine-detection vehicle called the AUGV, or Advanced Unmanned Ground Vehicle.

The vehicle is built from a kit originally developed by Lego Corporation, in cooperation with the Massachusetts Institute of Technology. Students are required

The AUGVs were evaluated based on strict AUGV Contract Section M requirements in areas of technical performance, producibility, supportability, and cost. The vehicle had to be assembled within certain time constraints, drop-tested, and finally, run through an obstacle course by both remote control and autonomously.

During the testing, plenty of interesting findings added to the overall source selection equation, with many notable examples coming to mind. Some of the AUGVs did not make the assembly time within established limits; others did not survive the drop-test portion of the assembly test unscathed; and some that lost parts were still able to limp through the remainder of the test.

Some of the AUGVs went speeding directly over the compact disks that represented landmines, while others correctly executed the delicate autonomous software maneuvers that allowed them to detect, alarm, and back away from these mines. When the final team was off the field, the groups–all in good humor and brandishing some battle wounds–were ready for the source-selection review and the announcement of the winner.

Students learned that source-selection criteria must be carefully articulated; but the criteria should also allow the source-selection authority the flexibility to consider cost and performance trades-offs that may sway a decision when considering extremely competitive contractors.

"The course gave a broad range of our people a much better understanding of the defense acquisition process and how it works," said Gerald Richardson, DCMA St. Petersburg Deputy. "I was most impressed with the DAU instructors. They were all top quality."

DCMA Teaming with PMs

In fiscal 2001, DAU conducted five course offerings for DCMA. The feedback has been excellent.

"I am thrilled with the results of our partnership with DCMA," commented DAU President Frank Anderson Jr. "It truly demonstrates the power and benefits when our faculty provide direct support to the workforce.

"We optimize the value of the learning experience by supporting action-learning initiatives in the workplace through just-in-time training targeted to meet specific job performance requirements.We are really excited about future action-learning opportunities with DCMA and other DoD organizations."

Prior to the tragic events of Sept. 11, fiscal 2002 course offerings were planned in Nashua, N.H., Los Angeles, Chicago, and Dallas. The St. Petersburg course is the most recent offering, and the other courses are in the process of being rescheduled.

Editor's Note: DCMA welcomes comments or questions on this article. Contact Gary Gustafson at *gary.gustafson@dau.mil*.

to develop a concept, build it, complete software programming, and test their product against the requirements of a system specification.

The students are introduced to the AUGV prior to arriving at the course. All receive a packet of information that includes a letter from the AUGV Program Office notifying them that their respective contractor teams have been awarded an AUGV prototype contract. Operating within their own Program Support Team, the students assume the role of a contractor; five teams then compete in the design, development, and testing of their AUGV prototypes.

The course proceeds in a workshop forum that integrates each stage in the AUGV's development with lectures and discussions on the related topics of engineering management and the PM's perspective.

"We had to plan and design this whole vehicle" said Sizemore. "You learn quickly that just because the software says it can go 45 miles per hour doesn't mean the gearing is capable."

The course provides, in a workshop-like forum, lectures and discussions on the related topics of engineering management and the program management perspective that integrates each stage in the AUGV development.

Course Specifics

Different areas related to program management are introduced each day. Day 1 establishes the parameters and competitive environment that carries through to the testing and "grand finale" of source selection.

Day 1 workshop topics include the background and comparison of operational requirements, systems specifications, and contract requirements. By the end of the initial workshops, each team member has been assigned a specific role within the systems engineering process, and all members are infused with the knowledge that individual contributions can have major impacts on the group's success.

The contractor teams are comprised of a PM, software engineer, mechanical engineer, head of testing, logistics and life cycle cost manager, and Earned Value Management analyst. Each team member plays the assigned role leading up to testing and source selection. This hands-on approach permits team members to share experiences across the various functional disciplines.

Day 1

- Systems Engineering Overview
- Requirements–Operational Requirements Document and System Specifications
- Solicitation, Proposal, and Award
- Contract Requirements
- Integrated Product Teams

Day 2

- Earned Value Management–Work Breakdown Structure
- Configuration Management
- Risk Management
- Technical Performance Measurements

Day 3

- Functional Analysis and Design
- Software
- Design Reviews
- Systems Concept Design

Day 4

- Test and Test Planning
- Fabrication
- Testing

Day 5

- Fabrication and Testing
- Design Review
- Vehicle Test and Best Value Determination

Test Day

Day 5 of the training combines all the previous lessons from the workshops and gives the students an opportunity to compete head-to-head with their best designs. During the Baltimore pilot and again in St. Petersburg, team members approached the testing with excitement, enthusiasm, but also with a certain degree of trepidation. While no corporate bonuses or threats of pink slips were on the line, some aspects of the competition had the seriousness of a battlefront.

DCMA Appoints DAU Liaison

Gary E. Gustafson was assigned as the Defense Contract Management Agency (DCMA) Customer Liaison Representative (CLR) to DAU in January 2002. Prior to joining DAU, Gustafson was DCMA's Customer Liaison to the U.S. Army Simulation, Training, and Instrumentation Command and the Naval Air Warfare Center Training Systems Division in Orlando Fla. He has also served DCMA as Chief, Contract Operations Group, DCMA Lockheed Martin, Orlando; Program and Technical Support Director, Defense Plant Representative Office Martin Marietta; and Program Integrator for the Navy F-14 program at Defense Plant Representative Office Grumman. Prior to joining DCMA Gustafson served in a variety of analysis, administrative, and production positions for the Naval Air Systems Command at Naval Plant Representative Office, Bethpage, N.Y.

Educated in New York, Gustafson holds a bachelor's degree in Psychology from Southampton College, and a master's degree in Education (Psychology) from C.W. Post College. He is a graduate of the Senior Executive Management Development Program, Naval Aviation Executive Institute; the Program Management Course (PMC 92-1), Defense Systems Management College; and the Senior Executive Fellows Program, John F. Kennedy School of Government, Harvard University. He is a member of the Defense Acquisition Corps and holds Level III certifications in Program Management and Production, Manufacturing, and Quality Assurance.

Acquisition Center of Excellence Will Drive New Capabilities to the Warfighter

Washington, D.C.–Laying the cornerstone for a top-to-bottom reform of the way the Service develops and buys weapons systems, the Air Force today opened a new Acquisition Center of Excellence (ACE).

The ACE's primary mission is to help acquisition professionals cut through burdensome, unproductive processes that slow the fielding of new warfighting capabilities. The new office, led by a Senior Executive Service member, also will be the driving force for implementing "Agile Acquisition," a sweeping series of initiatives designed to streamline the Air Force's acquisition systems. The plan was endorsed at a meeting of the Air Force's four-star generals and senior civilians in November 2001.

"Our acquisition system must be as agile and flexible as our warfighters," said Secretary of the Air Force James G. Roche. "It must identify the right targets and the best practices that enable us to provide the most cost-effective systems to the field. This Acquisition Center of Excellence is an ideal forum to deliver these results."

The major thrusts of Agile Acquisition are captured in six new reform-oriented "Lightning Bolts" developed by Air Force Acquisition leaders. They are:

- Results, Not Process–A wholesale assault on non-value-added processes under the Air Force's control that slow the acquisition process.
- Spiral: Success in Increments–An Air Force-wide initiative to synchronize spiral development efforts across the requirements, resources, development, testing, and sustainment communities.
- Roadblock Buster–Using the ACE to cut through red tape and, where necessary, to speed acquisition, to issue waivers to non-productive Air Force processes.
- Breeding Innovators–A comprehensive effort to train acquisition professionals to be innovators, and to replace risk aversion with risk management.
- Program Executive Office/Services Contracts–A central source of guidance, assistance, and policy development for Air Force services contracts, which now account for nearly half of all acquisition dollars.
- Idea Pipeline–A drive to establish better conduits for the exchange of ideas, innovations, and best business practices between industry and the Air Force.

"My charge from the Secretary is to foster a culture of innovation and reasonable risk-taking," said Dr. Marvin Sambur, Assistant Secretary of the Air Force for Acquisition. "Only if we do this will we be able to shorten acquisition cycle times, insert new technologies into systems throughout their life cycles, and deliver today's technology today.

"Agile Acquisition provides the strategy to do just that. The Lightning Bolts provide the road map, and the new ACE gives us the tools to succeed," Sambur said. "We want to work closely with our industrial partners to mine their best ideas so as to develop both an agile and credible acquisition process."

While headquartered at the Pentagon, the ACE will work closely with Air Force Materiel Command (AFMC) and Air Force Space Command, the two Air Force commands that acquire most major systems.

"The changes Agile Acquisition will demand are revolutionary! That's as it should be. Our world, and our mission, have changed radically in the past few months," said Gen. Lester Lyles, Commander, AFMC.

"We must change with it to ensure we provide the warfighter a responsive and effective acquisition system that meets his changing needs."

Lyles pointed out that Agile Acquisition will mesh perfectly with AFMC's Enterprise Management initiative. "These two efforts will work together to take us where we need to go to keep America's warfighters the most powerful and respected force in the world," he said.

The need to free the Acquisition community to accept reasonable risk and innovate is crucial to the continued success of the Air Force, according to Gen. John Jumper, Air Force Chief of Staff. The requirements and development processes simply have to be more responsive, he said, and the ACE will play a major role in making that happen. "We may–actually we know we will–make some mistakes along the way. That's OK. Our unbridled fear of mistakes is costing us far more than any sensible risktaking ever will," Jumper said.

Implementation of the Lightning Bolts is on a "very aggressive" schedule, said Darleen Druyun, Principal Deputy Assistant Secretary, Acquisition Management. She said she is particularly intent on stripping from Air Force regulations any "non-value-added" processes that are not required by law.

"Too often, we complain that the law requires us to do this or to do that, when in fact it's our own regulations implementing the law that are the culprits. Sometimes, we are our own worst enemies," she said. "That is about to change.

"We need to get on with this. If there's a consensus on anything in the area of acquisition reform, it is that there's been more than enough study. It's time for action," Druyun said.

Editor's Note: This information is in the public domain at *http://www.af.mil*.

Air Force Center of Excellence

AF ACE—An Innovator's "Field of Dreams"

TERRY LITTLE

After just two months as Director of the Air Force Acquisition Center of Excellence, I am beginning to feel a little like Kevin Costner in the great baseball movie "Field of Dreams."

"Build it and they will come," Costner, who played an Iowa corn farmer, was told. He built it, and they did come.

We're still very much in the process of building the ACE, but already they are coming. In our case, the "they" are acquisition pros who just know there has to be a better way.

We're open for business and ready to assist anyone in the acquisition community who needs a hand breaking down bureaucratic barriers, eliminating non-value added steps, and challenging the tired philosophy that says, "We've always done it that way."

Already, program managers and others interested in doing things smarter are contacting us. The response to the initial news of the ACE's formation confirms for me that there are many Air Force acquisition professionals out there who are eager to break out of the process-bound, checklist-oriented approach that for too long has delayed delivery of new capability to our warfighters.

Here's a sample of what's come in:

- We're helping an aircraft modernization program figure out a creative way to use long-lead purchases of computer hardware that could cut nine months off of the delivery of improved avionics.
- We're assisting a manager to get a waiver from a requirement to produce a complicated mission needs statement and operational requirements document for a simple, off-the-shelf software purchase.

We're open for business and ready to assist anyone in the acquisition community who needs a hand breaking down bureaucratic barriers, [and] eliminating non-value added steps...

- And, we've been working to break a logjam in a yearlong policy debate over when government employees and support contractors who are traveling to the same destination can share a ride. One of our acquisition centers estimates that a sensible relaxation of the rules could save that center more than $1 million a year in transportation fees charged under support contracts.

In and of themselves, none of these efforts is going to change the world, but as we attack bad processes one at a time we will build a better system.

This is my first assignment in Washington after more than two decades in the field. My experience tells me that many—perhaps even most—of our acquisition professionals know a dumb process or counterproductive rule when they see one. What they haven't known is where to turn to get help to make things better. In the past, too often it just didn't seem worth the trouble to fight the status quo. It was easier just to continue to punch the checklist.

The ACE exists to change that.

We can't promise to overhaul everything at once. But I do pledge that we will team with you to bring a common sense, results-oriented mindset to everything we do. If you have a suggestion, need help, or just want more information, please contact us at *ACE@pentagon.af.mil* or call us at 703-253-1450.

Terry Little
Director, Air Force Center of Excellence

Terry Little is DoD's most seasoned program manager with more than 20 years' experience heading major weapons acquisitions. He is also noted as one of the Department's most forceful advocates for acquisition and logistics excellence. He currently heads the Air Force Acquisition Center of Excellence (AF ACE). Prior to joining the ACE, he headed the Joint Air-to-Surface Standoff Missile (JASSM) program, as well as the Small Diameter Bomb (SDB) program. Both programs are models for acquisition innovation in the DoD. Prior to his current assignment he led the Joint Direct Attack Munition (JDAM) program for five years; JDAM was a pilot program for using commercial practices to buy military-unique systems.

Arrange for an Offering of DAU's New:

Leading Project Teams Course

LEARNING OBJECTIVES

- Learn and apply team building processes to develop and maintain effective teams
- Learn the roles of the project team leader and the skills needed to successfully perform these roles
- Evaluate individual leadership and team building strengths and development needs using a variety of feedback instruments.

COURSE LENGTH AND TOPICS

This one-week course will cover leadership, team building, team problem solving and decision making, team conflict resolution, setting team goals, empowerment and coaching, and leading change. The course will be taught using lecture/discussion, case studies, team exercises, and individual feedback instruments.

TARGET AUDIENCE

Acquisition workforce members with functional expertise but little team building or leadership experience.

PREREQUISITES

Completion of ACQ 101 is required and ACQ 201 is desired.

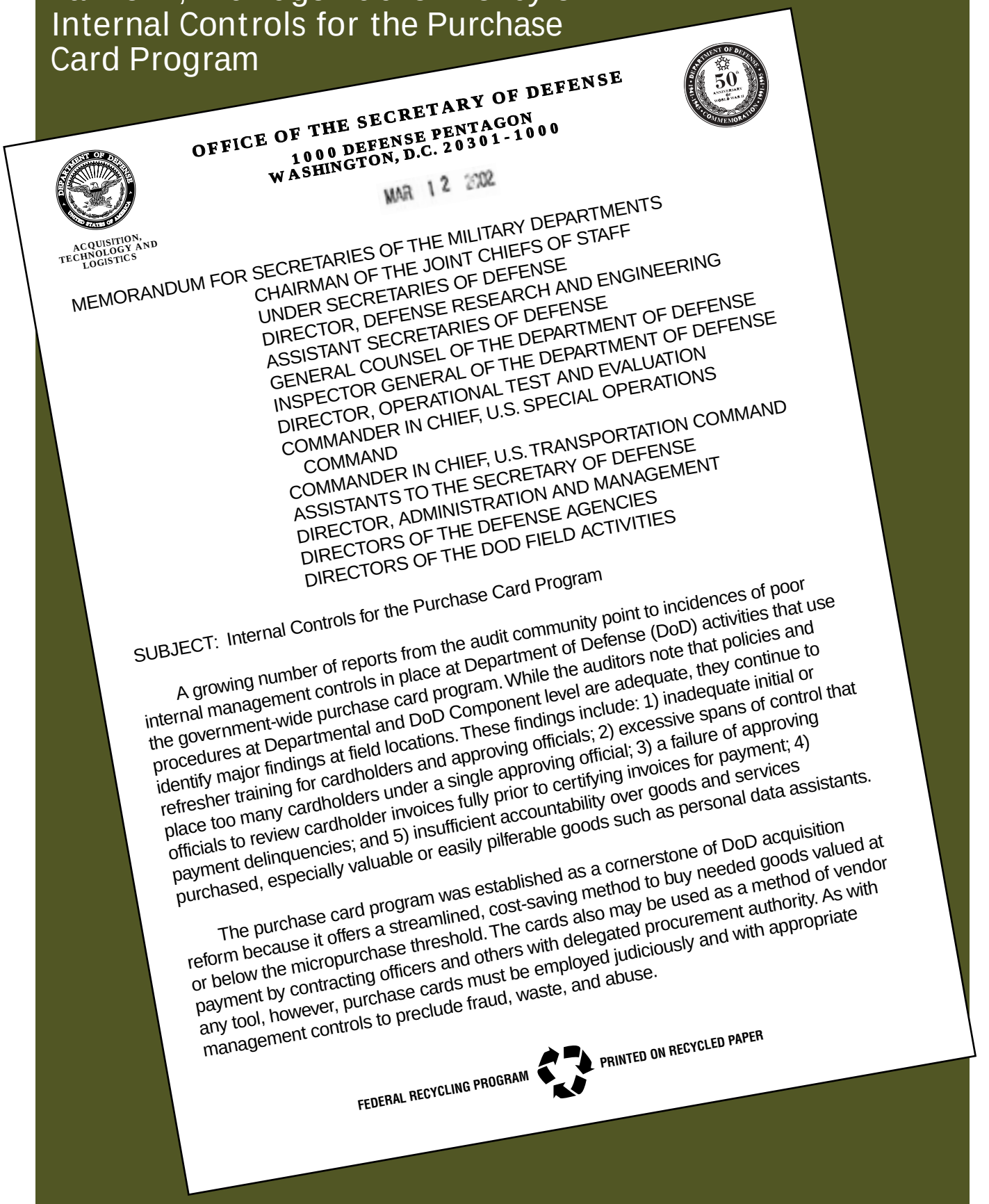
COURSE OFFERINGS

This course is offered on a fee-for-service basis with the date and location negotiated with the sponsor. The course can also be tailored to better meet the needs of the sponsoring organization.

CALL NOW!

Call the DAU Program Management and Leadership Department at 703-805-3424 or E-mail owen.gadeken@dau.mil to set up a course offering.

Zakheim, Aldridge Publish Policy on Internal Controls for the Purchase Card Program



OFFICE OF THE SECRETARY OF DEFENSE
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ACQUISITION, TECHNOLOGY AND LOGISTICS

MAR 12 2002

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
DIRECTOR, DEFENSE RESEARCH AND ENGINEERING
ASSISTANT SECRETARIES OF DEFENSE
GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE
INSPECTOR GENERAL OF THE DEPARTMENT OF DEFENSE
DIRECTOR, OPERATIONAL TEST AND EVALUATION
COMMANDER IN CHIEF, U.S. SPECIAL OPERATIONS COMMAND
COMMANDER IN CHIEF, U.S. TRANSPORTATION COMMAND
ASSISTANTS TO THE SECRETARY OF DEFENSE
DIRECTOR, ADMINISTRATION AND MANAGEMENT
DIRECTORS OF THE DEFENSE AGENCIES
DIRECTORS OF THE DOD FIELD ACTIVITIES

SUBJECT: Internal Controls for the Purchase Card Program

A growing number of reports from the audit community point to incidences of poor internal management controls in place at Department of Defense (DoD) activities that use the government-wide purchase card program. While the auditors note that policies and procedures at Departmental and DoD Component level are adequate, they continue to identify major findings at field locations. These findings include: 1) inadequate initial or refresher training for cardholders and approving officials; 2) excessive spans of control that place too many cardholders under a single approving official; 3) a failure of approving officials to review cardholder invoices fully prior to certifying invoices for payment; 4) payment delinquencies; and 5) insufficient accountability over goods and services purchased, especially valuable or easily pilferable goods such as personal data assistants.

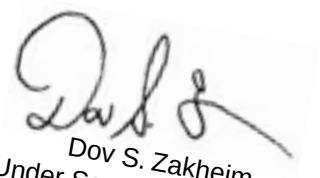
The purchase card program was established as a cornerstone of DoD acquisition reform because it offers a streamlined, cost-saving method to buy needed goods valued at or below the micropurchase threshold. The cards also may be used as a method of vendor payment by contracting officers and others with delegated procurement authority. As with any tool, however, purchase cards must be employed judiciously and with appropriate management controls to preclude fraud, waste, and abuse.

FEDERAL RECYCLING PROGRAM PRINTED ON RECYCLED PAPER

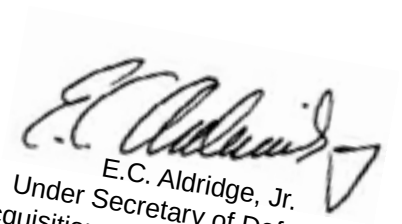
Effective management controls are required by the "Federal Managers' Financial Integrity Act of 1982" (which is codified in Title 31, United States Code, Section 3512) and implemented by DoD Directive 5010.38 and DoD Instruction 5010.40. Within this context, and relative to the purchase card program, the Fiscal Year 2001 Statement of Assurance of one military department noted that: "These weak internal controls have resulted in lost, stolen, missing, or misused government property, potentially abusive use of purchase cards, and payment of unauthorized and potentially fraudulent charges."

Use of the purchase card shall be in accordance with the Federal Acquisition Regulation, Part 13; the Defense Federal Acquisition Regulation Supplement, Part 213; the General Services Administration (GSA) SmartPay contract; and DoD and Component instructions and policy guidance. In particular, the purchase card shall only be used for authorized U.S. Government purchases. Intentional use of the purchase card for other than official government business is a very serious matter that directly affects public confidence in the Department. Commanders and managers at all levels are responsible for maintaining adequate internal review programs. Commanders and managers at all levels are also responsible for investigating alleged cases of purchase card fraud or abuse, and for taking appropriate corrective and disciplinary action whenever cardholders or approving officials are determined to have violated the rules and regulations governing the use of purchase cards.

The contacts for this memorandum are Ms. Melissa Rider, Office of the Under Secretary of Defense (Acquisition, Technology and Logistics), who may be reached at (703) 695-1098, or by e-mail at: Melissa.rider@osd.mil, or Mr. Tom Hafer, Office of the Under Secretary of Defense (Comptroller), who may be reached at (703) 602-0116, or by e-mail at: hafert@osd.pentagon.mil



Dov S. Zakheim
Under Secretary of Defense
(Comptroller)



E.C. Aldridge, Jr.
Under Secretary of Defense for
Acquisition, Technology and Logistics

DAU Increasing Momentum Toward Strategic Partnerships

Increased Return on DoD's Training Dollars

WAYNE GLASS

Just as strategic partnerships provide synergy for warfighters on joint development programs such as Joint Strike Fighter (JSF), equally beneficial are those strategic partnerships that promote and facilitate synergy in acquisition education for the DoD Acquisition, Technology and Logistics (AT&L) workforce and defense industry.

Independent operations are a luxury DoD can no longer afford, not only in warfighting but also in support functions such as DoD AT&L workforce training. In the face of deep budget cuts, and as we expand learning opportunities for our workforce, now more than ever we must leverage our precious resources to achieve increased return on our training dollars.

In January 2001, under the leadership of Donna Richbourg, then Acting Deputy Under Secretary of Defense (Acquisition Reform), DAU President Frank J. Anderson Jr., launched Strategic Partnerships as one of 10 Fast Track initiatives in support of the second of five goals announced by Under Secretary of Defense (Acquisition, Technology and Logistics) E.C. "Pete" Aldridge: *to Revitalize the Quality and Morale of the DoD AT&L Workforce.* This article is an update on the progress of that initiative.

Strategic Partnerships—No Better Way

What better way is there for DoD, through the Defense Acquisition University, to capitalize on the strengths of other private, public, and corporate universities,

Glass is a Professor of Systems Acquisition Management and Director for Strategic Partnerships, Strategic Planning Action Group, Defense Acquisition University, Fort Belvoir, Va. Also contributing to this article were Paul McMahon, DAU Liaison to the Office of the Director, Acquisition Initiatives, OUSD(AT&L); Lisa Johnson, Office of the DAU Provost, and Sylwia Gasiorek-Nelson, Editor, DAU Press.

than through strategic partnerships that create and offer more learning opportunities for the DoD AT&L workforce.

Initially, DAU had set a fiscal 2002 milestone to create 10 Strategic Partnerships. According to Paul McMahon, DAU's former Director of Strategic Partnerships, "With approximately twenty-five [strategic partnerships] in place or on the immediate horizon, that goal will be met."

energy and enthusiasm of the University's strategic partners. This outreach represents one of many benefits realized through DAU's transformation strategy of providing full services to customers within their own regions. These partnerships hold promise of great value and a total win-win scenario for DAU and other private, public, and corporate universities, industry, and professional associations.

DAU's appointment of Associate Deans for Outreach in each of its five regions is a deliberate attempt to leverage the

DAU's strategic partnerships greatly increase the value of past and existing DAU courses. These partnerships enhance the quality and morale of the AT&L workforce, and motivate the workforce to pursue additional continuous learning activities, increased knowledge, and skills. They also stimulate recognition of achievements by members of the AT&L workforce through award of commercial and academic certifications and degrees in recognition of their accomplishments.

These strategic partnerships successfully leverage new and expanded learning opportunities with other institutions. They also provide flexible opportunities to obtain the education component of Defense Acquisition Workforce Improvement Act (DAWIA) requirements, as well as more opportunities to earn academic degrees and Continuous Education Units required by acquisition policy.

The George Washington University and ESI Intl.

In its first formal academic partnership, DAU teamed up with The George Washington University (GWU) and ESI Intl. (ESI), an industry leader in project and contract management training.

Through this dynamic relationship, DAU students who have earned a Level I, II, or III Certification in one of the DAWIA career fields may take ESI courses and apply them toward a Joint Master's Certificate, backed by GWU, in one of four areas: Project Management, Information Technology Project Management, Commercial Contract Management, and Government Contracting.

"We're very proud of our reputation in the public sector as a premier provider of project management and contract management training," said Larry Seeley, ESI President. "DAU's decision to choose ESI's classes as an add-on to their very extensive list of internal classes underlines our understanding of the training needs of Federal Government employees."

"I am very excited about the DAU's partnership with ESI," said DAU President Frank J. Anderson Jr. "I will continue to encourage our students to take advantage of this opportunity to take classes

DAU STRATEGIC PARTNERSHIPS

Capitalizing on the Educational Strengths of Government-Industry Private, Public, & Corporate Universities

Signing of GWU, ESI, DAU Letter of Intent, Sept. 5, 2000. Seated from left: J. LeRoy Ward, Senior Vice President of Client Programs, ESI, Intl.; Chris Stelloh Garner, Functional Advisor, Program Management Career Field; Anderson; former DUSD(AR) Stan Soloway; and Deidre "Dee" Lee, Director of Defense Procurement. Standing from left: Paul McMahon, former Director of Strategic Partnerships, DAU; Charles W. Clark, Vice President Contracts Programs, ESI, Intl.; Kimberly A. Elibuyuk, Business Development Manager — Government Markets, ESI, Intl.; and Karen Barley, Vice President, Corporate University Enterprise, Inc.
Photo by Richard Mattox

Virgil Carter (left), Project Management Institute Executive Director, and DAU President Frank J. Anderson Jr., formalize their partnership at a signing ceremony held at the DAU Headquarters, Fort Belvoir, Va., on Jan. 4, 2002.
Photo by Army Sgt. Kevin Moses

Army Col. (P) James R. Moran, DAU Commandant (left) and Lawrence A. Auffrey, Vice President for Contracts, Pricing, and Risk Management, Northrop Grumman Corp., sign a Memorandum of Understanding Feb. 14, 2001, agreeing to pursue educational opportunities that are mutually beneficial.
Photo by Army Sgt. Kevin Moses

Signing of DAU, FTI Letter of Intent, Feb. 16, 2001. Seated from left: Spiros G. Pallas, Principal Deputy to the Director, Strategic and Tactical Systems, OUSD(AT&L); Frank Anderson Jr., DAU President; and Lavon Jordan, CEO Frontier Technology, Inc. Standing from left: DAU Professor Larry "Scoop" Cooper; Paul McMahon, former Director of Strategic Partnerships, DAU; and Ron Schroder, Vice President, Frontier Technology, Inc.
Photo by Richard Mattox

Representatives of DAU and the U.S. Navy sign a Memorandum of Understanding to kick off the Joint Service Program Management Community of Practice initiative, Feb. 7, 2001. From left: Eileen Roberson, Navy Acquisition Reform Executive; Ivan Hall, Deputy, Knowledge Management; Frank Anderson Jr., President, DAU; and John Hickok, DAU Knowledge Management Officer.
Photo by Richard Mattox

DAU President Frank J. Anderson Jr., and Dr. Belle S. Wheelan, President of Northern Virginia Community College (NOVA) sign a Letter of Intent to permit DAU students, as part of a strategic partnership, to complete DAU training and take NOVA courses for Certificate and Associate Degree Programs.
Photo by Army Sgt. Kevin Moses

On Dec. 11, 2001, the Presidents of both DAU and the University of Phoenix formally signed a Memorandum of Agreement. Seated from left: Frank Anderson Jr. DAU President; and Craig Swenson, Provost/Senior Vice President, University of Phoenix. Standing from left: Brian Mueller, Chief Operating Officer, University of Phoenix Online; Russ Paden, Regional Director of Academic Affairs, University of Phoenix Online; Wallis Stemm, Director of Articulation and College Relationships, University of Phoenix, University Services; and Tony Digiovanni, CEO University of Phoenix Online.
Photo courtesy Ben Arnold Photography

On April 30, 2001, DAU signed Letters of Intent (LOI) with Florida Institute of Technology (FIT), George Mason University (GMU), and Mary Washington College (MWC). Pictured from left: Kenneth E. Cox, Research Associate, GMU; Paul McMahon, former Director of Strategic Partnerships, DAU; Dr. Lee S. Dewald Sr., Associate Professor and Director of Graduate Studies, FIT; Dr. Ronald L. Marshall, Associate Vice President, Extended Campus, FIT; Jonathan L. Gifford, Director, Professional Studies in Transportation Policy, Operations, and Logistics, GMU; Lloyd H. Muller, Director, National Capital Region, FIT; Frank J. Anderson Jr., DAU President; Donna Richbourg, Director, Acquisition Initiatives, USD(AT&L); Dr. Blair Staley, Assistant Professor of Leadership and Management, Mary Washington College James Monroe Center (MWC JMC); Kingsley E. Haynes, Dean, The School of Public Policy, GMU; Larry Heller, Chair, Logistics Management Support Department, DAU Capital and Northeast Region; and Dr. Alan G. Heffner, Program Director, MWC JMC.

Photo by Richard Mattox

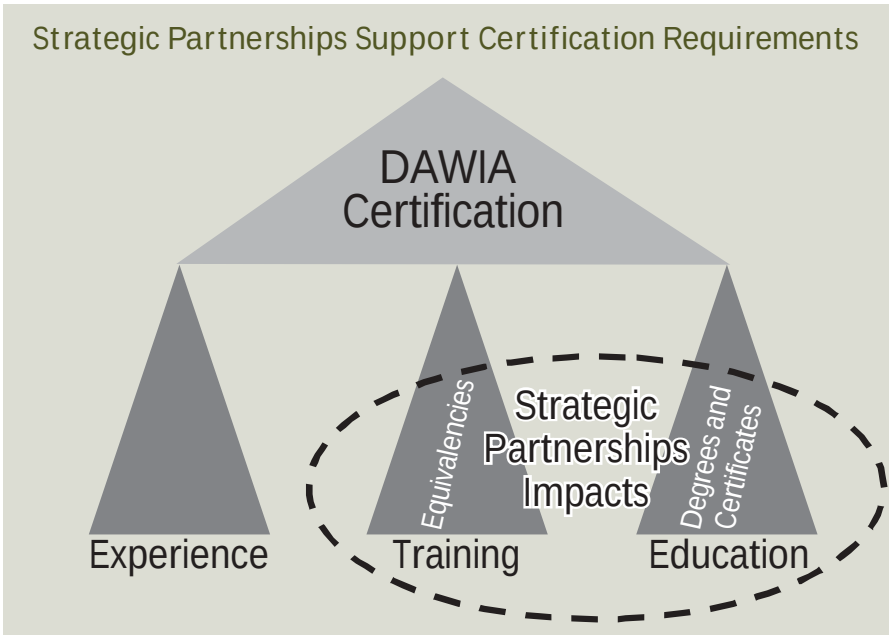
Educational Opportunities "Brown Bag" Session, March 8, 2002
DAU Main Campus, Fort Belvoir, Va.

Wayne Glass, DAU Director for Strategic Partnerships (right) shares a laugh with DAU President Frank Anderson Jr., as they welcome participants.

Ten speakers, representing eight of DAU's strategic partners participated in the March 8 "Brown Bag" session. Pictured is David Fitzpatrick (left), representing Howard University, with DAU Professor Norm McDaniel.

Speakers at DAU's first Educational Opportunities "Brown Bag" session played to a "full house" as participants engaged them in a wide diversity of educational issues.

Photos by Army Sgt. Kevin Moses



from ESI and hopefully earn a Master's Certificate. As a matter of fact, I can't wait to register for a class myself. I look forward to building a strong relationship with ESI and expanding ESI's role in providing top-notch training to our students in the future."

DAU students taking ESI courses have three options: classroom training, on-site training, and e-training. For additional information about this program, call (888) 374-4682.

George Mason University School of Public Policy

Under a new educational strategic partnership with George Mason University (GMU), students are able to leverage completed DAU training toward an M.S. in Transportation Policy, Operations, and Logistics. The GMU degree program, which is offered in conjunction with graduate courses offered by GMU's School of Public Policy, is available to any one who is certified in at least one of the DoD AT&L career fields; holds a bachelor's degree from an accredited university; has achieved, at a minimum, Level I certification in at least one DAU career field; and is admitted to a GMU degree program.

Depending on the American Council on Education (ACE)-certified DAU courses taken, the DoD AT&L workforce member will receive up to nine semester hours of credit toward the degree programs. For more information on the GMU program, call (703) 993-2275 or e-mail: jgifford@gmu.edu.

Florida Institute of Technology (Florida Tech)

DAU and Florida Tech have established 11 cooperative graduate certificate programs leading to a graduate certificate in the following areas: Business Management, Contract Management, eBusiness, Human Resources Management, Information Systems Management, Logistics, Materiel Acquisition Management, Program Management, Quality Management, Systems Management, and Transportation Management.

These cooperative programs will award credit for the education, training, and experience of members of the DoD AT&L workforce in pursuit of certification in at least one of the acquisition career fields, in conjunction with graduate courses offered by Florida Tech.

The graduate certificate programs are available to any member of the DoD AT&L workforce who holds a bachelor's degree from a regionally accredited university and has Level I certification in at least one acquisition career field.

Depending on the career field, level of certification, and choice of graduate certificate, the DoD AT&L workforce member will receive 0, 3, or 6 semester hours of general graduate-level credit toward the specified graduate certificate. The remaining semester hours must be completed either online or at one of the nine Florida Tech Graduate Centers.

A cumulative GPA of 3.0 must be obtained in order to be awarded the graduate certificate. Up to 12 semester hours of course work taken as part of a Graduate Certificate program may be transferred into an appropriate graduate degree at a later date.

Interested applicants can visit *http://www.segs.fit.edu/dau* to find the list of graduate centers and contact information, as well as to find out the specific requirements for each graduate certificate.

University of Phoenix Online

On Dec. 11, 2001, the Presidents of both the Defense Acquisition University and the University of Phoenix formally signed an agreement. This agreement facilitates the transfer of ACE credit recommendations or other credit-bearing transcript courses earned by the AT&L workforce into a Bachelor of Science in Management degree program at the University of Phoenix Online.

Students may choose from four tracks as the emphasis for the degree program: Information Systems Acquisition, Financial Management/Cost Estimating, Contract Management, or an interdisciplinary focus in Acquisition Management.

DAU students may apply up to 30 hours of DAU course work toward the 120-semester-hour requirement. Of the remaining 90 semester hours, the student must take 30 hours from the University of Phoenix, either online or at a campus site, and 60 hours can be taken at the University of Phoenix or other accredited institutions.

For further information please contact: Nancy Cervasio, University of Phoenix, Student Services Questions: (602) 387-6279; or Vince Grell, University of Phoenix, Enrollment Questions: (602) 387-6231

Project Management Institute (PMI)

The Project Management Institute (PMI®), the world's leading not-for-profit professional association for project management, signed a Memorandum of Understanding (MOU) with the Defense Acquisition University on Jan. 4, 2002, to develop, publish and maintain the U.S. DoD Extension to *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*–2000 Edition.

The *PMBOK® Guide*, accredited by the American National Standards Institute (ANSI), is the official standards document of PMI, which serves as a basic reference about the generally accepted knowledge and practices of the project management profession, and is the world's de facto project management standard.

Through the efforts of Fred Ayer and and Bill Bahnmeier, DAU Professors of Acquisition Management, and Dave Scibetta, Deputy Director, DAU Operations, the first draft of the Defense Extension to PMI's *PMBOK® Guide* was ready to publish last year. Final publication is now expected in the July-August 2002 timeframe.

Over the years, DAU Professors Owen Gadeken and Norm McDaniel have also supported PMI through presentation of papers at symposia, teaching seminars, and giving talks to PMI-sponsored events—a role they plan to continue.

The knowledge and practices presented in the *PMBOK® Guide* are applicable to most projects most of the time, and consensus is widespread on their value and usefulness.

Virgil Carter, PMI Executive Director, represented PMI during the signing ceremony held at DAU Headquarters, Fort Belvoir, Va. "PMI is excited to work closely with the U.S. Department of Defense to create an extension of the body of knowledge that can be specifically applied to the U.S. Defense Industry. It is PMI's objective to create tools that can be used by organizations to successfully implement project management skills and knowledge, both generally and within specific industries."

Carter noted that PMI has learned over the years that it needs partners. "And we've also learned," he said, "that the only two potentially enduring assets that we as an organization or as a profession of project managers have, are knowledge and community. That's why [PMI] has dedicated our organization to furthering the global knowledge about, and the community access to, project management…So when we have an opportunity like this one to partner with another like-minded organization dedicated to both knowledge and community, we're very pleased."

DAU President Frank Anderson Jr., joined Carter in signing the memorandum. "I think this is really a significant day for the University. It represents the production of a new learning asset that will be beneficial not just for members of the defense community, but also for our private sector counterparts—this is a great way to start off 2002."

Anderson called the DAU-PMI alliance "a very important relationship with an organization that we believe is a leader in providing training opportunities for individuals throughout the nation and the world in terms of project management training."

DAU anticipates that PMI will consider adoption of the Defense Extension as a PMI Standard and will publish it in that form for sale to all those interested in obtaining a copy. For those interested in learning more about the Institute, visit the PMI Web site at *http://www.pmi.org*.

Brown Bag Session on Educational Opportunities

DAU's Strategic Partners have agreed to come to the DAU Headquarters at Fort Belvoir, Va., and talk with DAU students, staff, and faculty through informal "Brown Bag" sessions. These sessions are designed to share information on the educational programs of DAU's Strategic Partners.

On March 8, 2002, DAU held the first session, with 10 speakers participating from the following academic institutions:

- Dr. Lee Dewald—Florida Institute of Technology
- Dr. Jonathan Gifford—George Mason University School of Public Policy
- Kimberly Elibuyuk—George Washington University–ESI Intl.
- David Fitzpatrick—Howard University
- Robert Thomas—Georgetown University
- Dr. Joe Ferrara—Georgetown University

- Dr. Elisabeth Wright—Mary Washington College
- Dr. Andres Fortino—George Mason University School of Management
- Dr. Archie Tinelli—George Mason University School of Management
- Virginia Graves—Northern Virginia Community College

Personnel from Program Executive Offices and Program Management Offices in the Capital and Northeast Region are also welcome to attend the information sessions. In the future, these sessions may be offered to the other DAU Regions as well.

Formal Teaming with Industry

DAU and industry have been collaborating for many years on knowledge sharing initiatives under the leadership of DAU Industry Chair Frank Swofford, supported by the National Defense Industrial Association.

Since launching of the Strategic Partnerships initiative, DAU has begun more formal teaming with industry to commit toward shaping a common vision for government-industry partnerships. Through partnering with industry, the University will leverage DAU and industry joint talents and resources in any way that will advance DAU's vision of building a "best in class" corporate university to support Under Secretary Aldridge's goals.

Northrop Grumman Corp.

One defense company, Northrop Grumman Corporation, has already stepped forward with an MOU to create and achieve this common vision with DAU. On Feb. 14, 2002, Army Col. (P) James R. Moran, DAU Commandant, and Lawrence A. Auffrey, Vice President for Contracts, Pricing, and Risk Management, Northrop Grumman Corp. (NGC), signed an MOU designed to lay the foundation for a strategic cooperative effort between DAU and NGC and establish a framework for DAU and NGC to pursue educational opportunities that are mutually beneficial to both parties.

Raytheon

On April 12, 2002, DAU President Frank Anderson Jr., and Raytheon Vice President Donald M. Ronchi will sign an MOU to share training resources and promote educational opportunities. Together, they will jointly advance DAU's vision of building a "best in class" corporate university to support DoD goals; and Raytheon's vision to be the most admired defense and aerospace systems supplier through world-class technology and people.

Boeing and Lockheed Martin

DAU is also actively pursuing partnerships with Boeing and Lockheed Martin, and anticipates that more defense companies will participate in these non-exclusive, collaborative partnerships to:

- Promote sharing of training resources, including attendance at each other's courses.
- Participate in the reengineering of each other's courses, as requested and able.
- Serve as instructors, panel members, guest speakers, or reviewers of student case presentations and mock negotiation exercises in each other's courses, providing both the contractor's and government's perspective.
- Participate in course development with a focus on Program Management.
- Contract and lead change.
- Provide mutual feedback on training pilots and other course development activities.
- Participate in other knowledge management innovations.

Because strategic partnerships offer so much toward expanding DAU's capabilities to fulfill its mission of educating the acquisition workforce, the University is continuing its push for increased alliances and has developed partnerships with still other institutions such as the University of Virginia, Johns Hop-

Two Personnel from the Department of the Army in Kuwait Earned their Joint Master's Certificates in Government Contracting

kins University, the University of Maryland, and the American Graduate University.

In the coming weeks and months, DAU expects to formalize partnerships with the Coast Guard, the Committee for Purchase from People Who Are Blind or Severely Disabled, Howard University, Federal Acquisition Institute, Massachusetts Institute of Technology (MIT), University of Kentucky, University of California at Los Angeles (UCLA), University of Alaska, Hampton University, Wilberforce University, Old Dominion University, Lockheed Martin, Boeing, and many others.

Editor's Note: The author welcomes questions or comments on this article. Contact him at *wayne.glass@dau.mil*.

Acquisition Deskbook Update—Feb. 28, 2002

New/Revised Documents in Acquisition Deskbook Reference Library

http://web2.deskbook.osd.mil/default.asp

Mandatory Documents

Federal Acquisition Regulation (FAR)

- FAC 2001-04; Feb. 8, 2002 (Volume 67, Number 27)

Defense Federal Acquisition Regulation Supplement (DFARS)

- DFARS Change Notices 20020129

Department of Defense (DoD) Documents

- Class Deviation—Extension of Program Applying Simplified Procedures to Certain Commercial Items; Jan. 11, 2002
- DoDD 4630.5; Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS); Jan. 11, 2002
- DSCA 02-05; Interim Security Assistance Management Manual (SAMM) Change—Country Code "BZ" for the Bahrain National Guard (BNG); Feb. 5, 2002
- DSCA 01-26; Interim Security Assistance Management Manual (SAMM) Change—Country Code "E2" for the United Nations Transitional Authority in East Timor (UNTAET) and "E1" for SAARMS Data; Nov. 2, 2001
- DoD 5000.4-M,; Department of Defense Cost Analysis Guidance and Procedures; Dec. 11, 1992
- DoD 5105.38-M; Security Assistance Management Manual (SAMM); Feb. 5, 2002
- DoD 5105.38-M; SAMM E-Changes
- DoD 5105.38-M; SAMM and DSCA Policy Memoranda and Messages

Air Force Documents

- TO 00-5-3; AF Technical Manual Acquisition Procedures; April 1, 2001
- AF Instruction 32-1032; Planning and Programming Appropriated Funded Maintenance, Repair, and Construction Projects; Sept. 25, 2001
- AFMAN 23-110; Volume 9; USAF Supply Manual—Security Assistance Program Procedures; Aug. 1, 2001
- AFMC Manual 21-1; Air Force Materiel Command; Technical Order System Procedures; Jan. 15, 1997

Discretionary Documents

Army Documents

- USASAC Pamphlet 12-2; Orientation Pamphlet—Handbook on Security Assistance; March 25, 1996
- MANPRINT Guidebook for Systems Design and Assessment; July 1997

Air Force Documents

- AFMC Financial Management Handbook; Updated December 2001; (Includes Change 3); Chapters 1 Through 68
- AFMC Financial Management Handbook; Updated November 2001; (Includes Change 3); Chapters 69 Through 98
- Contractor Performance Assessment Reporting System (CPARS); December 2001

Defense Logistics Agency (DLA) Documents

- Early CAS Teaming; For Acquisition Success
- DLAM 8000.3; MOCAS Users Manual; For Contract Administration; Part 1; Aug. 1, 1994
- DLAM 8000.3; MOCAS Users Manual; For Contract Administration; Part 2—Chapters 1-6; Aug. 1, 1994

Defense Contract Audit Agency (DCAA)

- DCAAM 1400.1; Personnel Management Manual; August 1993; (Updated December 2001)
- DCAAM 5025.15; Publications System; February 2002
- DCAAM 5110.1; Defense Contract Audit Agency Organization Manual; March 2001; (Updated December 2001)
- DCAAP 7641.90; Information for Contractors; January 2002

Education & Training Materials

- DAU—CON 204; Intermediate Contract Pricing

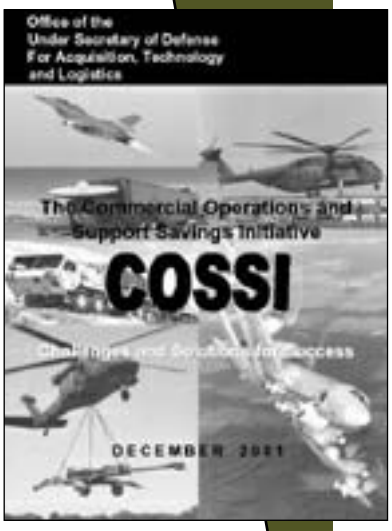
Now Online! USD(AT&L) Publishes New Handbook on COSSI

OFFICE OF THE UNDER SECRETARY OF DEFENSE
3000 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-3000

14 DEC 2001

ACQUISITION, TECHNOLOGY AND LOGISTICS

Commercial Operations and Support Savings Initiative Handbook



The Commercial Operations and Support Savings Initiative (COSSI) program was designed to improve readiness and reduce operations and support (O&S) costs by inserting existing commercial items or technology into military legacy systems. COSSI emphasizes the rapid development of prototypes and fielding of production items based on current commercial technology.

This handbook will enhance the ability of contracting officers, COSSI program managers, and other personnel to optimize program benefits. The handbook does this by clarifying pre-award and post-award procedures, summarizing lessons learned from existing programs, and offering practical management reference tools for both civilian contractor and military customer participants who are transitioning COSSI programs from prototype development to production.

Though nothing in this handbook should be construed as directive in nature, I encourage you to use and apply it. All processes described are examples. Those processes actually used should be tailored to each specific application. This handbook is available online at *www.acq.osd.mil/ar*. Any questions or feedback concerning the handbook should be referred to Craig Curtis, Office of Acquisition Initiatives, at (703) 697-6399, or electronically at craig.curtis@osd.mil

Charles J. Holland
Deputy Under Secretary of Defense
(Science & Technology)

Donna S. Richbourg
Director, Acquisition Initiatives

Editor's Note: This information is in the public domain. To download the December 2001 COSSI Handbook, go to *http://www.acq.osd.mil/ar*.

DEPARTMENT OF DEFENSE NEWS RELEASE

Second and Third Rounds of Business Initiatives Formalized

The Department of Defense announced today that members of the Business Initiative Council (BIC) have approved two more broad sets of initiatives designed to improve business operations across the DoD and enhance support to the warfighter.

Potential efficiencies in both rounds focused on stringent legislative requirements, cumbersome directives, and lengthy staffing processes, which the DoD workforce deals with on a daily basis. While BIC estimates of savings are not finalized, anticipated savings for these initiatives are well over $100 million dollars per year. In addition to dollar savings, the benefits from the BIC-approved initiatives include reductions in cycle time, improved customer service/performance, streamlined procedures, and increased flexibility, to name a few. Both rounds of initiatives addressed specific areas of personnel management, logistics/readiness, corporate operations, and acquisition management.

The council, established and presided over by Under Secretary of Defense for Acquisition, Technology and Logistics Pete Aldridge, is composed of the military Service Secretaries and the Vice Chairman of the Joint Chiefs of Staff. The BIC reports directly to the Senior Executive Council, whose members include the Secretary and Deputy Secretary of Defense, the Service Secretaries, and the Under Secretary of Defense for Acquisition, Technology and Logistics.

The BIC was launched in July to implement bureaucracy-reducing and/or money-saving opportunities in the business practices of the DoD. This is core to Secretary Rumsfeld's broader “Battle on Bureaucracy” campaign, announced on Sept. 10, 2001, and complements the President's Freedom to Manage Act of 2001, introduced into the Senate on Nov. 1, 2001.

“We on the BIC are excited to have this tremendous opportunity to transform the way we do business and inculcate the best business practices into the DoD culture, in support of the Secretary's initiative,” said Aldridge.

The list of new initiatives is available on the Web at *http://www.defenselink.mil/news/Feb2002/d20020227bic.pdf* .

Editor's Note: This information is in the public domain at *http://www.defenselink.mil/news.*

ACQUISITION & LOGISTICS EXCELLENCE

An Internet Listing Tailored to the Professional Acquisition Workforce

Surfing the Net

DEPARTMENT OF DEFENSE

Under Secretary of Defense (Acquisition, Technology and Logistics) (USD[AT&L])
http://www.acq.osd.mil/
ACQWeb offers a library of USD(AT&L) documents, a means to view streaming videos, and jump points to many other valuable sites.

Director, Acquisition Initiatives (AI)
http://www.acq.osd.mil/ar
Acquisition news and events; reference library; AI organizational breakout; acquisition education and training policy and guidance.

DoD Inspector General
http://www.dodig.osd.mil/pubs/index.html
Search for audit and evaluation reports, Inspector General testimony, and planned and ongoing audit projects of interest to the acquisition community.

Deputy Director, Systems Engineering, USD (AT&L/IO/SE)
http://www.acq.osd.mil/io/se/index.htm
Systems engineering mission; Defense Acquisition Workforce Improvement Act information, training, and related sites; information on key areas of systems engineering responsibility.

Defense Acquisition Deskbook
http://web1.deskbook.osd.mil
Automated acquisition reference tool covering mandatory and discretionary practices.

Defense Acquisition History (DAH) Project
http://www.army.mil/cmh-pg/acquisition/acqhome.htm
The DAH Project is a multi-year program to produce a detailed history of defense acquisition since 1947, to be published in six volumes. The site features a quarterly online newsletter, project status announcements, acquisition history links, and contact information.

Defense Acquisition University (DAU)
http://www.dau.mil
DAU Course Catalog, *Program Manager* magazine and *Acquisition Review Quarterly* journal; course schedule; policy documents; and training news from the Defense Acquisition Workforce.

Defense Acquisition University Virtual Campus
https://dau1.fedworld.gov
Take DAU courses online at your desk, at home, at your convenience!

Army Acquisition Corps (AAC)
http://dacm.rdaisa.army.mil
News; policy; publications; personnel demo; contacts; training opportunities.

Army Acquisition
http://acqnet.saalt.army.mil
A-MART; documents library; training and business opportunities; past performance; paperless contracting; labor rates.

Navy Acquisition Reform
http://www.acq-ref.navy.mil/
Acquisition policy and guidance; World-class Practices; Acquisition Center of Excellence; training opportunities.

Navy Acquisition, Research and Development Information Center
http://nardic.onr.navy.mil
News and announcements; acronyms; publications and regulations; technical reports; "How to Do Business with the Navy"; much more!

Naval Sea Systems Command
http://www.navsea.navy.mil/sea017/toc.htm
Total Ownership Cost (TOC); documentation and policy; Reduction Plan; Implementation Timeline; TOC reporting templates; Frequently Asked Questions.

Navy Acquisition and Business Management
http://www.abm.rda.hq.navy.mil
Policy documents; training opportunities; guides on areas such as risk management, acquisition environmental issues, past performance, and more; news and assistance for the Standardized Procurement System (SPS) community; notices of upcoming events.

Navy Best Manufacturing Practices Center of Excellence
http://www.bmpcoe.org
A national resource to identify and share best manufacturing and business practices being used throughout industry, government, and academia.

Space and Naval Warfare Systems Command (SPAWAR)
https://e-commerce.spawar.navy.mil
Your source for SPAWAR business opportunities, acquisition news, solicitations, and small business information.

Joint Interoperability Test Command (JITC)
http://jitc.fhu.disa.mil
Policies and procedures for interoperability certification. Access to lessons learned; link for requesting support.

Air Force (Acquisition)
http://www.safaq.hq.af.mil/
Policy; career development and training opportunities; reducing TOC; library; links.

Air Force Materiel Command (AFMC) Contracting Laboratory's Federal Acquisition Regulation (FAR) Site
http://farsite.hill.af.mil/
FAR search tool; *Commerce Business Daily* Announcements (CBDNet); *Federal Register;* Electronic Forms Library.

Defense Systems Management College (DSMC)
http://www.dsmc.dau.mil
DSMC educational products and services; course schedules; job opportunities.

Defense Advanced Research Projects Agency (DARPA)
http://www.darpa.mil
News releases; current solicitations; "Doing Business with DARPA."

Defense Information Systems Agency (DISA)
http://www.disa.mil
Structure and mission of DISA; Defense Information System Network; Defense Message System; Global Command and Control System; much more!

National Imagery and Mapping Agency
http://www.nima.mil
Imagery; maps and geodata; Freedom of Information Act resources; publications.

Defense Modeling and Simulation Office (DMSO)
http://www.dmso.mil
DoD Modeling and Simulation Master Plan; document library; events; services.

Defense Technical Information Center (DTIC)
http://www.dtic.mil/
Technical reports; products and services; registration with DTIC; special programs; acronyms; DTIC FAQs.

Defense Electronic Business Program Office (DEBPO)
http://www.defenselink.mil/acq/ebusiness/
Policy; newsletters; Central Contractor Registration; Assistance Centers; DoD EC Partners.

Open Systems Joint Task Force
http://www.acq.osd.mil/osjtf
Open Systems education and training opportunities; studies and assessments; projects, initiatives and plans; reference library.

Government Education and Training Network (GETN) (For Department of Defense Only)
http://atn.afit.af.mil
Schedule of distance learning opportunities.

Government-Industry Data Exchange Program (GIDEP)
http://www.gidep.corona.navy.mil
Federally funded co-op of government-industry participants, providing an electronic forum to exchange technical information essential to research, design, development, production, and operational phases of the life cycle of systems, facilities, and equipment.

ACQUISITION & LOGISTICS EXCELLENCE

An Internet Listing Tailored to the Professional Acquisition Workforce

Surfing the Net

FEDERAL CIVILIAN AGENCIES

Acquisition Reform Network (ARNET)
http://www.arnet.gov/
Virtual library; federal acquisition and procurement opportunities; best practices; electronic forums; business opportunities; acquisition training; Excluded Parties List.

Committee for Purchase from People Who are Blind or Severely Disabled
http://www.jwod.gov
Provides information and guidance to federal customers on the requirements of the Javits-Wagner-O'Day (JWOD) Act.

Federal Acquisition Institute (FAI)
http://www.faionline.com
Virtual campus for learning opportunities as well as information access and performance support.

Federal Acquisition Jump Station
http://nais.nasa.gov/fedproc/home.html
Procurement and acquisition servers by contracting activity; CBDNet; Reference Library.

Federal Aviation Administration (FAA)
http://www.asu.faa.gov
Online policy and guidance for all aspects of the acquisition process.

General Accounting Office (GAO)
http://www.gao.gov
Access to GAO reports, policy and guidance, and FAQs.

General Services Administration (GSA)
http://www.gsa.gov
Online shopping for commercial items to support government interests.

Library of Congress
http://www.loc.gov
Research services; Congress at Work; Copyright Office; FAQs.

National Technical Information Service (NTIS)
http://chaos.fedworld.gov/onow/
Online service for purchasing technical reports, computer products, videotapes, audiocassettes, and more!

Small Business Administration (SBA)
http://www.SBAonline.SBA.gov
Communications network for small businesses.

U.S. Coast Guard
http://www.uscg.mil
News and current events; services; points of contact; FAQs.

TOPICAL LISTINGS

Committee for Purchase From People Who Are Blind or Severely Disabled
http://www.jwod.gov
Provides information and guidance to federal customers on the requirements of the Javits-Wagner-O'Day (JWOD) Act.

MANPRINT (Manpower and Personnel Integration)
http://www.MANPRINT.army.mil
Points of contact for program managers; relevant regulations; policy letters from the Army Acquisition Executive; as well as briefings on the MANPRINT program.

DoD Specifications and Standards Home Page
http://www.dsp.dla.mil
All about DoD standardization; key Points of Contact; FAQs; Military Specifications and Standards Reform; newsletters; training; nongovernment standards; links to related sites.

Joint Advanced Distributed Simulation (JADS) Joint Test Force
http://www.jads.abq.com
JADS is a one-stop shop for complete information on distributed simulation and its applicability to test and evaluation and acquisition.

Risk Management
http://www.acq.osd.mil/io/se/risk_management/index.htm
Risk policies and procedures; risk tools and products; events and ongoing efforts; related papers, speeches, publications, and Web sites.

Earned Value Management
http://www.acq.osd.mil/pm
Implementation of Earned Value Management; latest policy changes; standards; international developments; active noteboard.

Fedworld Information
http://www.fedworld.gov
Comprehensive central access point for searching, locating, ordering, and acquiring government and business information.

GSA Federal Supply Service
http://pub.fss.gsa.gov
The No. 1 resource for the latest services and products industry has to offer.

Commerce Business Daily
http://www.govcon.com/
Access to current and back issues with search capabilities; business opportunities; interactive yellow pages.

INDUSTRY AND PROFESSIONAL ORGANIZATIONS

DAU Alumni Association
http://www.dsmcaa.org
Acquisition tools and resources; government and related links; career opportunities; member forums.

Electronic Industries Alliance (EIA)
http://www.eia.org
Government Relations Department; includes links to issue councils; market research assistance.

National Contract Management Association (NCMA)
http://www.ncmahq.org
"What's New in Contracting?"; educational products catalog; career center.

National Defense Industrial Association (NDIA)
http://www.ndia.org
Association news; events; government policy; *National Defense* magazine.

International Society of Logistics
http://www.sole.org/
Online desk references that link to logistics problem-solving advice; Certified Professional Logistician certification.

Computer Assisted Technology Transfer (CATT) Program
http://catt.bus.okstate.edu
Collaborative effort between government, industry, and academia. Learn about CATT and how to participate.

Software Program Managers Network
http://www.spmn.com
Site supports project managers, software practitioners, and government contractors. Contains publications on highly effective software development best practices.

Association of Old Crows (AOC)
http://www.crows.org
Association news; conventions, conferences and courses; *Journal of Electronic Defense* magazine.

Program Manager Writer's Guidelines in Brief (http://www.dau.mil/pubs/pm/articles.asp)

Purpose

The purpose of *Program Manager* Magazine is to instruct members of the DoD Acquisition, Technology & Logistics (AT&L) Workforce and Defense Industry on policies, trends, legislation, senior leadership changes, events, and current thinking affecting program management and defense systems acquisition, and to disseminate other information pertinent to the professional development and education of the DoD Acquisition Workforce.

Subject Matter

Subjects may include, but are not restricted to, all aspects of program management; professional and educational development of DoD's AT&L Workforce; acquisition and logistics excellence; Defense industrial base; research and development; test and evaluation; modeling and simulation; commercial best business practices; and interviews with Government-Industry Defense executives.

Program Manager is not a forum for academic papers, fact sheets, technical papers, or white papers (these are typically recognized by their structured packaging, e.g., Introduction, Background, Discussion, Methodology, Recommendations, Conclusions). Such papers are more suited for DAU's journal, *Acquisition Review Quarterly*. *Program Manager* Magazine publishes, for the most part, feature stories that include real people and events. Stories that appeal to our readers—who are senior military personnel, civilians, and defense industry professionals in the program management/acquisition business—are those taken from real-world experiences vs. pages of researched information.

Good writing sounds like comfortable conversation. Write naturally and avoid stiltedness. Except for a rare change of pace, most sentences should be 25 words or less, and paragraphs should be six sentences. Vary your syntax. Avoid falling into the trap of writing one declarative sentence after another. Package your article with liberal use of subheads.

Length of Articles

Program Manager is flexible regarding length, but articles most likely to be published are generally 2,000-3,000 words or about 10 double-spaced pages, each page having a 1-inch border on all sides. However, do not be constrained by length requirements; tell your story in the most direct way, regardless of length. Do not submit articles in a layout format, nor should articles include any footnotes, endnotes, or references. *Be sure to define all acronyms.*

Photos and Illustrations

Articles may include figures, charts, and photographs. They must, however, be in a separate file from the article. Photos must be black and white or color. *Program Manager* does not guarantee the return of photographs. Include brief, numbered captions keyed to the photographs. Place a corresponding number on the lower left corner, reverse side of the photographs. Also, be sure to include the *source* of the photograph. *Program Manager* publishes no photos from outside the Department of Defense without express permission. Photocopies of photographs are not acceptable.

With the increase in digital media capabilities, authors can now provide digital files of photos/illustrations. These files should be placed on our server via FTP (File Transfer Protocol). (Our author guidelines at *http://www.dau.mil/pubs/pm/articles.asp* contain complete instructions on transferring these files.) Note that they must meet the following publication standards set for *Program Manager*: color and greyscale (if possible); EPS files generated from Illustrator (preferred) or Corel Draw (if in another format, provide program format as well as EPS file); TIFF files with a resolution of 300 pixels per inch; or other files in original program format (i.e., Powerpoint).

Biographical Sketch

Include a short biographical sketch of the author(s)—about 25 words—including current position and educational background.

Clearance

All articles written by authors employed by or on contract with the U.S. Government must be cleared by the author's public affairs or security office prior to submission. In addition, each author must certify that the article is a "Work of the U.S. Government." This form is found at the end of the PM Author Guidance. Click on "Copyright Forms" and print the last page only, sign, and submit with the article. Since all articles appearing in *Program Manager* are in the public domain and posted to the DAU Web site, no copyrighted articles will be accepted. This is in keeping with DAU's policy of widest dissemination of its published products.

Submission Dates

Issue	Author's Deadline
January-February	1 December
March-April	1 February
May-June	1 April
July-August	1 June
September-October	1 August
November-December	1 October

Submission Procedures

Articles (in MS Word) may be submitted via e-mail to *collie.Johnson @dau.mil* or via U.S. mail to: DAU PRESS, ATTN C. JOHNSON, 9820 BELVOIR RD, SUITE 3, FORT BELVOIR VA 22060-5565. For photos/illustrations accompanying your article, send us the original photos or follow the guidance under "Photos and Illustrations"—opposite column. All submissions must include the author's name, mailing address, office phone number (DSN and commercial), and fax number.

PM

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